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**QUALITY AIR FORCE INITIATIVE AS RELATED TO THE PRACTICES OF
TOTAL QUALITY MANAGEMENT**

by

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A Dissertation

Submitted to the Graduate Faculty

of the

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in partial fulfillment of the requirements

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Date

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ABSTRACT

Total Quality Management (TQM), a technique associated with business and manufacturing, was investigated in two areas: the Air National Guard and higher education. A survey was conducted by the 119th Fighter Wing (119th FW) of the North Dakota Air National Guard to measure the success of its Total Quality Initiative. This data was made available for an assessment regarding the use of TQM practices outlined by Deming's "14 Points of Top Management," which is also the basis for the federal government's TQM practices. Prior to any comparisons, an analysis of the questionnaire was done. A factor analysis (Alpha, with varimax rotation) showed that essentially a single scale was found; all items loaded 0.45 or higher on the first factor; a Cronbach's alpha of 0.98 was found on this scale termed, "Satisfaction with the Implementation of TQM." A Chi-Square analysis was initiated to establish differences in responses within the units of the Fighter Wing. Among units, significant differences were found as to the success of TQM, indicating an unevenness in the success of implementation of TQM. Those units were closely aligned, with administration (i.e., State Headquarters) being more favorable in their assessments. It was further determined that the 119th FW's management structure is comparable to the business implemented TQM, which in turn is comparable to higher education's management structure on endorsement of mission statements.

Within higher education a different approach was used. Significant persons in the academic hierarchy, administration who also teach; were interviewed. An assessment of these interviews yielded the interpretation that TQM was initially approached with some enthusiasm by central administrators, but over time--and particularly as top-management changed--little remained of the initial impetus. Maintaining a lively process of TQM would appear to require nurturing that was not particularly extant in the institutions of higher learning. What seemed to be present for TQM in higher education were several manuals for public display.

CHAPTER I

INTRODUCTION

Total Quality Management (TQM), a technique traditionally associated with business and manufacturing, has spread from the business community to governmental agencies and on to educational institutions (Heverly, 1991). As TQM has moved from business to other fields, the transition outside the business domain has been accompanied by confusion, frustration, and disappointment (Freed, 1994). Staffs at government agencies, and as the faculty and staffs at institutions of higher education are unsure of the goals of Total Quality Management. When management does not give feedback on TQM, it is little wonder that employees are unsure of the goals of the system (Ryan, 1995). When middle management has no major role in TQM, this lack of enthusiasm is understandable.

TQM has disappeared from the management style of many businesses; however, it is seeing resurgence as it is now necessary for many business and organizations that wish to obtain federal contracts to implement a form of TQM known as International Organization for Standardization (ISO 9000) guidelines (Karon, 1996). At the same time, it may become necessary for institutions of higher education that wish to continue to receive funding and grants from the government to also follow federal guidelines similar to ISO 9000. This has started businesses and organizations taking another look at TQM practices. It could be argued that ISO 9000 is a slightly disguised form of TQM.

Businesses and organizations that have struggled with TQM in the past, now find it necessary to learn what has transpired within organizations reporting success with TQM. One of the areas where TQM has been implemented is the United States Armed Forces (USAF), which have borrowed the business practice of TQM and adapted it for their own use. The United States military believe they have had success in TQM practices; however, little information is available outside the government to substantiate this claim. A secondary analysis of a TQM survey implemented by a National Guard unit may provide relevant information about their use of TQM practices. This information may prove useful to other organizations struggling with TQM, particularly institutions of higher education. Higher education has management structures and service components comparable to business management structures and a service component that can be compared to the local and national service missions of the National Guard.

Total Quality Management

A Description

To understand TQM, it is necessary to understand its history and how it is defined. The United States Navy first coined the phrase "Total Quality Management" in 1988, based on the management structure of "14 Points for Top Management" by Deming (1986). The Department of Defense mandated TQM for itself and all governmental contractors (Marchese, 1991). TQM is based on the conceptualization that it places responsibility for quality problems with management rather than on the workers

(Heverly, 1991). A principle concept of TQM is the management of Process Variation (Heverly, 1991, p. 6):

whereby variations in production or quality within a manufacturing or service process are viewed as 'special cause' variations, which can be removed by employees operating the process, or "common cause" variations, which require management action to change some inherent feature of the process.

The United States Federal Government further defines Total Quality Management (TQM) as (US Government Printing Office, 1992, p. 1):

a comprehensive, customer-focused system . . . adopting to improve the quality of . . . products and services. It is a way of managing at all levels, top management to front-line, to achieve customer satisfaction by involving all employees in continuously improving the work process of the organization.

Total Quality Management is conceptualized as a strategic, integrated management system for achieving customer satisfaction. It "involves all managers and employees and uses quantitative methods to improve continuously an organization's processes. It is not an efficiency ('cost-cutting') program, a morale -- boosting scheme or a project that can be delegated to operational managers or staff specialists" (US

Government Printing Office 1992, p. iii). At the foundation of TQM are three ideas:

1. Focus on achieving customer satisfactions;
2. Seek continuous improvements; and
3. Full involvement of the entire workforce.

Achieving these principles requires the establishment of a culture shift within an organization aimed at making the new culture more participative (Deming, 1986).

The TQM Survey

A survey to identify the effectiveness of the Total Quality Management program known as Quality Air Force Initiative was initiated within the 119th Fighter Wing of the North Dakota Air National Guard in May 1995. The 119th Fighter (119th FW) survey attempts to determine: (a) if evaluation measures are being implemented within their organization; (b) if the "workers" (the enlisted and lower ranking officers) perceive the management (middle to high ranking officers) as implementing TQM rather than implementing TQM as a joint venture; and (c) the measure of success of their Quality Air Force Initiative (QAFT).

The evaluation methods and success of TQM implementation in the military, as compared to educational institutions, can provide insight into how the structure of an organization follows the functional needs of successful TQM implementation. The use of TQM in the United States military can be viewed as comparable to TQM programs in higher education. This comparison can be made due to the similarity in their management structure, and because both organizations have a long history and culture which would be changed through the use of TQM.

Change occurs because TQM is not simply a set of specific management techniques and tools. TQM is a way of managing that necessitates the ideas of TQM becoming part of the culture and the environment of the organization. The culture of an organization reflects the prevailing norms, values, beliefs, and assumptions that determine how workers relate to one another and to their jobs. It is maintained in TQM that “[i]f the culture emphasizes quantity, power, inspection, blame, win-lose competition, and conformity, the culture itself is an obstacle to quality” (US Government Printing Office, 1992, p. 3). Concentrating efforts to instruct only upper management or administration in the implementation of TQM will have a superficial effect on what happens in the day-to-day workings of a business (Wolverton, 1993). Implementation at the management level has been the mode of TQM implementation at federally-funded organizations across America, including colleges, universities, and the United States military (Freed, 1994). TQM is, therefore, perceived as a fad by many faculty and administrators across America. They believe that TQM falls short of its goal to allow for sharing of ideas and long range goals. The supporters of TQM hold the idea that educators can use TQM to overcome restrictive educational guidelines and form learning communities (Schenk, 1993). If it can overcome management mandates, the United States military can define its goals in a changing global power structure while implementing TQM practices. The United States military can also implement TQM throughout their institutions’ cultures. Structure and funding bring together higher education and the military, which can produce programs and guidelines for integrating TQM into their respective cultures. TQM claims that the integration of TQM practices

into the culture of an organization can strengthen an organization. According to Juran (1991), "As far as measuring the TQM results that have been achieved, there's a big information vacuum out there. Hardly anything useful is going on as far as evaluating results" (p. 51). This has prompted accusations that TQM is little more than a "religious doctrine that admonishes the unwashed to just do it, in the blind hope that results will follow" (Sims, 1992, p. 138). The analysis of the 119th Fighter Wing's Quality Air Force Initiative (QAFI) survey could help fill part of the information vacuum and possibly lead to ideas for strengthening educationally-instituted Total Quality Management programs.

Research Questions

1. Did the Quality Air Force Initiative survey provide an assessment of Total Quality Management within the 119th Fighter Wing?
2. How do the units within the 119th Fighter Wing compare to other units within the group?
3. How does the 119th Fighter Wing compare to the active duty forces?
4. How does the management structure of the 119th Fighter Wing compare to businesses implementing Total Quality Management standards?
5. How does the management structure of the 119th Fighter Wing compare to institutions of higher education?

Limitations and Delimitations

Personnel within the 119th Fighter Wing who constructed and implemented the survey provided the data for the QAFI. The present analysis is a secondary analysis, hence the origin of the questions and collection of the data were not under the present

writer's control. This has required special handling of the data which indicated unit identification. Unit identification was initially intended to be based on the self-selected job description categories. Job descriptions were originally based on the initial questions of the survey to delineate individuals worked. An attempt to categorize respondents through the use of the five questions resulted in over- and under- representation of members to a particular unit within the larger group. As a result, an enlisted member of the 119th Fighter Wing's Quality Team sorted the survey to place respondents into their most probable category. While surveys normally would have a code indicating from which unit they would have originated, this was not possible in this secondary analysis, since the survey had been distributed without individual coding. It can be surmised that only an approximation could be made as to accurate placement of a person into a unit.

When this survey was conducted less than half of the members of the 119th Fighter Wing had completed Total Quality Management training. Their responses might differ from what they might have been had they completed this training. The hand sorting of respondents may have resulted in an inflation of responses of dissatisfaction of the TQM process by members of the Fighter Wing. The dissatisfied members of the Fighter Wing may not have understand the goals of TQM throughout the Fighter Wing or within their particular unit. Approximately 80 percent of the Fighter Wing had completed TQM training in April 1996.

Definitions

The following definitions are important to this research.

Assessment. A systematic process of collecting and analyzing data to determine the current, historical, or projected status of an organization (Air Force Quality Institute, 1994, p. 79).

Cause. An established reason for the existence of a defect or problem (Air Force Quality Institute, 1994, p. 79).

Cultural resistance. A form of resistance based on opposition to the possible social and/or organizational consequences associated with change (Air Force Quality Institute, 1994, p. 85).

Culture organizational. A common set of values, beliefs, attitudes, perceptions and accepted behaviors shared by individuals within an organization (Air Force Quality Institute, 1994, p. 85).

Culture change. A major shift in attitude, norms, sentiments, beliefs, values, operating principles and behaviors of an organization (Air Force Quality Institute, 1994, p. 85).

Customer. Anyone for whom an organization or individual provides goods or services. Can be internal or external (Air Force Quality Institute, 1994, p. 86).

Empowerment. The act of placing accountability, authority, and responsibility for processes and product at the lowest possible level. The extent of how much a person is empowered is dependent on their capabilities and the seriousness of the consequences (Air Force Quality Institute, 1994, p. 88).

Enable. Removing the barriers to empowerment (Air Force Quality Institute, 1994, p. 88).

Group dynamics. An ongoing process involving interaction of individuals within a team to achieve the desired objective (Air Force Quality Institute, 1994, p. 91).

Mission. An organization (and of an activity) describes its reason for existence. Mission statements are broad and expected to remain in effect for an extended period of time (Air Force Quality Institute, 1994, p. 96).

Process control. The daily activities necessary to meet the needs and expectations of the customer (Air Force Quality Institute, 1994, p. 100).

Process Variation. Variations in production or quality within a manufacturing or service process are viewed as special cause variations (Heverly, 1991, p. 6).

Quality. Consistently meeting or exceeding customer expectations (Air Force Quality Institute, 1994, p. 101). The definition of quality varies at the different levels of the armed services:

Quality as defined by United States Air Force. Quality Air Force is a leadership commitment and operating style that inspires trust. Teamwork and continuous improvement throughout the Air Force (119th Fighter Wing, 1996, p. 7).

Quality as defined by the National Guard Bureau. TQM is a system for leading and managing quality-improvement efforts throughout a total organization force (119th Fighter Wing, 1996, p. 7).

Quality as defined by the Air National Guard. Customer focused, leadership and management system that creates and sustains a culture of continuous improvement and total involvement [in the Air] Force (119th Fighter Wing, 1996, p. 7).

Quality Air Force. A leadership commitment and operating style that inspires trust, teamwork and continuous improvement everywhere in the Air Force (Air Force Quality Institute, 1994, p. 102).

Quality circles. Quality improvement and self-improvement study group composed of workers and their supervisor who functions as a leader (Air Force Quality Institute, 1994, p. 102).

Quality management. The management of a process to maximize customer satisfaction at the lowest overall cost to the organization (Air Force Quality Institute, 1994, p. 102).

Secondary analysis. Statistical analysis of information obtained from someone who witnessed the writing of the survey and was a witness to the collection of data.

Stakeholder. Any individual, group, or organization that will have a significant impact on, or will be significantly impacted by, the quality of the product or service [that are] provide[d] (Air Force Quality Institute, 1994, p. 104).

Statistical process control (SPC). The application of statistical techniques for measuring and analyzing the variation in processes (Air Force Quality Institute, 1994, p. 104).

Statistical quality control (SQC). The application of statistical techniques for measuring and improving the quality of processes. SQC includes SPC, diagnostic tools, sampling plans and other statistical techniques (Air Force Quality Institute, 1994, p. 104).

Total quality. A strategic integrated system for achieving customer satisfaction that involves all managers and employees and uses quantitative methods to continuously improve an organizations processes. Often combined with other words to indicate this approach to various organizational functions or activities, as in: total quality management, total quality leadership, total quality control or total quality culture (Air Force Quality Institute, 1994, p. 106).

Zero-defect. A long range value or concept. It implies the need for never-ending improvement (Air Force Quality Institute, 1994, p. 107) to reach the ideal of no defects in a product.

CHAPTER II

LITERATURE REVIEW

The management practices of United States business after World War II did not include concessions to the world economy nor to the worker within the factory. United States businesses had been riding the post World War II boom until the 1970s energy crisis and competition from the Japanese in the 1980s made it necessary for United States businesses to take notice of their managerial practices. It was at this time that United States businesses became aware of the theories behind management practices which included W. Edwards Deming and his "14 Points for Top Management," as well as the practices of Joseph M Juran and Philip B. Crosby. United States businesses, as well as organizations and institutions of education, soon realized that to stay competitive they needed to understand Total Quality Management.

History

W. Edwards Deming

The early 1980s brought about a surge in interest in "quality," partly due to the defection of American consumers to the import market for goods and services which they had previously bought from United States producers (Deming, 1988). American consumers wanted products with long life. If a cheaper product was not available, the American consumer wanted the higher-priced item to supply their need and last longer if possible (Pegels, 1984). The United States-built products were not meeting the American

consumers' needs (Suarez, 1992). Japan became the country from which the American consumer could purchase quality products at lower prices (Pegels, 1984). United States companies quickly scrambled to identify how the Japanese were producing quality products at lower prices (Deming, 1986). Japan's ability to produce products which outlived United States products has been contributed to their implementation of a management style known as, "Total Quality Management" (TQM). Formal formation of TQM ideas were implemented in Japan after World War II when General Douglas MacArthur gave Homar Sarasohn and W. Edwards Deming the job of teaching Japanese companies how to manufacture error-free radios (Nagel, 1994). Japanese management in other companies recognized this project's programs as being highly useful. These companies recognized the usefulness of Deming's maxim that "improvement of quality begets naturally and inevitably improvement of productivity" (Deming, 1986, p. 2). This was furthered by engineers who studied literature on quality control supplied by Bell Laboratories and found that productivity does improve as variation is reduced (Deming, 1986). Ironically, Deming could find no one in the United States interested in quality ideas and subsequently guest lectured in Japan in 1950 on the topic (Marchese, 1991). Joseph Juran similarly could find no United States company interested in quality improvements and became instrumental in helping Japan to achieve modern TQM practices.

TQM was virtually unknown in the United States at the time the "14 Points for Top Management" were introduced by Deming (1986). TQM has its roots, though not its ideals, in the late 1800s and early 1900s with the introduction of Taylor's (1911)

Scientific Management. Taylor pioneered the idea that a product is the result of a series of processes that can be studied, improved, and ultimately perfected. This was primarily applied to the productivity of the processes. Taylor reasoned that “it would be easier to use human resources more efficiently if the activities of managing a task were separated from its execution” (Sethi, Namiki, Swanson, 1984, p. 126). Specialization and professionalization occurred through development of professional managers, the specialization of various managerial skills, and the development of organizational structures to direct the work of large bureaucracies (Sethi, Namiki, Swanson, 1984). Taylor’s theories are still in practice in the United States, as exemplified by the growing numbers of people instructed in specialized management training (Sethi, Namiki, Swanson, 1984) and its use in assembly lines (Karpel, 1995).

Little in management or productivity practices changed in the United States until the 1920s with the introduction of quality improvements through process control using the work of Shewhart, Dodge, and Roemig (1931; 1986). Their work shifted away from Taylor’s methods towards an emphasis on prevention as an approach to quality improvements. Through the development of the statistical process control (SPC) chart and other statistical tools based on random variability, a process and product could be monitored and acted upon before it produced defects. The 1950s and 1960s saw United States industry in a boom on the international market. This resulted in almost an entire management generation’s (1950-1973) philosophy that American industry could do no wrong. This also brought about the belief that overseas markets could not possibly

compete with the United States market. Also, it was believed that American consumers were a captive audience (Deming, 1988).

The energy crisis in the early 1970s helped show the interdependencies that exist within a worldwide economy. Also, by this time American consumers were buying imported automobiles and electronics at an ever increasing rate (Pegels, 1984). United States companies began to realize that competitiveness was determined by a set of uncontrollable, complex, international variables, and productivity and quality could be the key to internal variables that could be controlled. Companies turned toward models such as Quality of Worklife (QWL), Employee Involvement, Quality Circles, Gain sharing, and Labor-Management programs which tapped into the potential abilities, skills, and knowledge of the American worker and produced gains in quality and productivity. However, these changes did not last. The models were seen as lacking the necessary component of system wide change (Total Quality Management History, 1995). The problem, as conceptualized by Deming (1986), laid deep within United States businesses and it fell upon Deming to bring Total Quality Management to United States industry.

Deming, in his broadcast of the landmark NBC White Paper in 1980 (Suarez, 1992), "If Japan Can, Why Can't We," preached the same message he had brought to and supported in Japan for over 40 years. Deming combined management philosophy with statistical process control (SPC) to stress that top management must lead quality as it cannot be delegated. The day-to-day application of his "14 Points for Top Management" are said to improve quality within a framework of management that can be service industry or manufacturing and of any size. The points of management would apply to a

division within a company as well. The “14 Points for Top Management” were said by Deming to be the basis for transformation of all industry. “It will not suffice merely to solve problems, big or little. Adoption and action on the 14 points are a signal that the management intend to stay in business and aim to protect investors and jobs” (Deming, 1986, p. 23). Such a system formed the basis for lessons for top management in Japan in 1950 and in subsequent years. These fourteen points are (Deming, 1986, p. 23-24):

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease cost.
6. Institute training on the job.
7. Institute leadership. The aim of the supervision should be to help people and

machine and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

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

9. Break down barriers between departments. People in research, design, sales, and production must work as a team to foresee problems of production and in use that may be encountered with the product or service.

10. Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the cause of low quality productivity belong to the system and thus lie beyond the power of the work force.

11. (a) Eliminate work standards (quotas) on the factory floor. Substitute leadership. (b) Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.

12. (a) Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. (b) Remove barriers that to people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual merit rating and of management objective.

13. Institute a vigorous program of education and self-improvement.

14. Put everybody in the company to work to accomplish the transformation.

The transformation is everybody's job.

Deming's 14 point program puts much of the direct responsibility for quality improvement on management and line workers and relatively little on quality professionals. Top management is expected to lead in the quest for quality and develop a management system to enhance the improvement process. Meanwhile, every worker is responsible for ensuring the quality of his or her own work through understanding the expectations of the management (Deming, 1986).

To understand the expectations of management, it is also necessary for everyone to understand the concept behind Deming's 14 points, which have been elaborated upon by Deming and summarized in the following pages.

Elaboration on Deming's 14 Points

Creating constancy of purpose for improvement of product and service.

According to Deming (1986), a business faces problems of maintaining a quality product now and in the future. It is important to deal with the "today" problems of immediate sales, budget, profits, and sales, but it is more important to make sure the business will exist in 10, 20, or 30 years. To achieve a long-term plan of existence, a constancy of purpose requires establishment of obligations, including (a) innovation-allocating resources for long-term planning; (b) resources being placed into research and education; and (c) constant improvement of design of the product or services provided (Deming, 1986).

Adopt the new philosophy. Deming's (1986) second point for management requires the adoption of TQM practices to be implemented in United States businesses for

the businesses to become competitive in a world economy. According to Deming, America can no longer (1986, p. 26-27):

tolerate commonly accepted levels of mistakes, defects, materials not suited for the job, people on the job that do not know what the job is and are afraid to ask, handle damage, antiquated methods of training on the job, inadequate and ineffective supervision, management not rooted in the company, job hopping in management, buses and trains late or even canceled because a driver failed to show up. Filth and vandalism raise the cost of living and, as any psychologist can aver, lead to slovenly work and dissatisfaction with life and with the workplace.

Cease dependence on mass inspection. Deming's (1986) third point of management states that routine 100 percent inspection to improve quality is too late, ineffective, and costly. Quality Comes from improvement of the production process, not from inspection (Deming, 1986). Improvement of the production process is usually gauged by the minimum average cost per unit, where the cost to improve the production process is measured against the cost of having products returned as defects. This cost can be calculated based on inspection of incoming parts to the production process. If parts are defective as they come into the process the product will also be defective. The minimal average cost, says Deming, therefore relies on the cost of inspection versus return of defective product rate. Inspection can take the form of no inspection, in which the mean lies to the left of the break-even quality, resulting in no inspection; 100 percent

inspection in which the mean lies to the right of the break-even quality resulting in 100 percent inspection; or chaos rules (Deming, 1986).

End the practice of awarding business on the basis of price tag alone. Deming's fourth point of management says that "we can no longer leave quality, service, and price to the forces of competition for price alone" (1986, p.32-33). The product with the lowest price does not necessarily result in a quality product. "American industry and the United States government, civil and military, are being rooked by rules that award business to the lowest bidder" (p. 32). The aim, says Deming, in purchasing tools or equipment should be to minimize the net cost per hour or year of life. This adoption of quality products should develop into a single source, long-term relationship between purchaser and supplier. The long-term relationship will result in the supplier developing products for the purchaser as part of an ongoing consistent business partnership. This relationship also provides a constancy of purpose for both businesses resulting in a mutual confidence and aid between purchaser and vendor. What one company buys from another is not just materials. It buys continual improvement of quality, which can only be achieved through a long-term relationship of loyalty and trust (Deming, 1986).

Issues of awarding contracts based on preset quotes have been in the public eye with the questioning of the practices of Affirmative Action. President Clinton has upheld the United States government's support of its Affirmative Action Programs: "the Federal Government will continue to support lawful consideration of race, ethnicity, and gender under programs that are flexible, realistic, subject to reevaluation, and fair." This practice of Affirmative Action may include the preferential awarding of government contracts to

qualified minority businesses (Clinton, 1995, p. 1264). This practice has resulted in qualified businesses, which are not headed by minorities, losing government contracts to qualified, minority run businesses (Bolick, 1996). This practice may also lead to producing a higher priced product because the contract has been awarded to the preferentially awarded contractor. This preferential award may go against Deming's ideas of awarding business contracts to providers who can build partnerships with the contracting company. Businesses that are qualified for the current need of a company may not necessarily be able to grow with the contracting company.

Improve constantly and forever the system of production and service. In his fifth point of management, Deming's (1986) practice of TQM states that quality must be built in at the design stage, which starts with the design. The intent to build quality products must be translated into plans, specifications, and tests that are fixed by management. TQM is further utilized in the redesigning of a product over time to meet the consumers needs. This dictates that quality is a never-ending process of improvement, which includes understanding how a product is used and misused. Improvement of the product is a continual work process with vendors, a continual process of better allocation of human effort and better training, and a removal of barriers to pride of workmanship both for production workers and for management and engineers (Deming, 1986).

Institute training. According to Deming, training must include every member of the business, including management, which needs training to learn about the company, "all the way from incoming material to customer. . . . Management must understand and act on the problems that rob the production worker of the possibility of carrying out his

work with satisfaction” (Deming, 1986, p. 52). Meanwhile, production workers typically are given no formal training, but rather are set down at a machine and told to work. Providing training allows workers to be more productive and to know what to do when a problem comes about (Deming, 1986). Workers and management, within the conceptualization of TQM, are expected to be thinking individuals.

Adopt and institute leadership. Deming (1986), in his seventh management point, states, “The job of management is not supervision, but leadership. Management must work on sources of improvement, the intent of quality of product and of service, and on the translation of the intent into design and actual product” (Deming, 1986, p. 54).

Deming (1986) has stated that western management needs to adopt the style that expects managers to be leaders by (a) removing barriers that make it impossible for the hourly worker to do his/her job with pride of workmanship; (b) understanding the work they supervise; and (c) rather than treating defective items as special cases to be tracked down and removed looking for the root problem.

Drive out fear. Deming (1986) believes that no one can put in his/her best performance unless s/he feels secure. (This would follow Maslow’s hierarchy of needs). An hourly employee cannot produce a quality product if quotas are mandated along with fear of job loss if quotas are not met. Similarly, no one can put in his or her best job performance if there is widespread resistance to learning new processes. Some people are afraid of knowledge as it might disclose some of their failings. A better outlook, said Deming, is to embrace new knowledge because it may lead to doing a better job. Loss of production due to workers’ fears about quotas and fears about learning new production

methods are threats which must be removed from the workplace environment if work performance is to be optimized (Deming, 1986).

Break down barriers between staff areas. In his ninth management point, Deming (1986) wrote that a business must be run by a team of workers and not by individual groups under a common name. People in research must communicate with those in design, with those in production and assembly, and with the customer. Teamwork requires one group to compensate with their strengths for someone else's weakness. Using this method everyone to benefit. This resulting teamwork, said Deming, produces a better product through communication of possible problems at early stages rather than letting them develop into product shortages, late delivery, damaged goods, or poor quality products (Deming, 1986).

The management structure of an organization needs to undergo change if TQM is to be successful. As reported by Merron (1994), TQM utilizes a team approach for problem identification and resolution; the worker becomes involved in the process as a member of a team. However, in many TQM programs, improvement teams have membership that is restricted to either management or lower level employees. One group of government TQM consultants argues that mixed teams organize only in functional areas (Carr and Littman, 1990). As a consequence, organization members can perceive evaluation measures as imposed by others, and most especially by management. Under these circumstances, organizational workers considering themselves underrepresented in criteria development resulting in their challenge the credibility of the measures they see

dictated by management. Workers then engage in activities that disrupt, rather than advance, the change processes (Carter, Klein, and Day, 1992).

Eliminate slogans, exhortations, and targets for the work force. According to Deming (1986), there must be an elimination of targets, slogans, exhortations, and posters that urge the work force to increase productivity. From Deming's point of view, posters and slogans never help anyone to do a better job and are directed at the wrong people. "They arise from management's supposition that the production workers could. . . accomplish zero defects, improve quality, improve productivity, and all else that is desirable. The charts and posters take no account of the fact that most of the trouble comes from the system. Exhortations and posters generate frustration and resentment. They advertise to the production worker that management is unaware of the barriers to pride of workmanship" (Deming, 1986, p. 67). The immediate effect of posters and pledges may result in temporary improvement of productivity, however, in time, it ceases, or is even reversed. One could interpret Deming's view to be that TQM is the most successful intervention method for long-term productivity increases.

Eliminate numerical quotas for the work force and for people in management. Deming's (1986) view is that quotas do not promote reduction of mistakes or improvement of service. Workers typically will produce to their quotas and nothing more, thereby keeping cost and defects up. This includes workers which are pushed to achieve high quotas with a threat to job elimination if those quotas are not met. Workers then produce the numbers with no regard for quality. Internal numerical goals set by management of a company usually have no method for achieving these goals provided

with the mandate. Goals such as “increase productivity 3 percent” have no meaning except for a managerial attempt “to manage without knowledge of what to do, and is in fact usually management of fear” (Deming, 1986, p. 77). The “fear factor” is the fear that a worker will lose their job if a quota is not met.

Remove barriers that rob people of pride of workmanship. Deming (1986) in his twelfth management point stated that a worker who “feels important to a job will make every effort to be on the job. He will feel important to the job if he can take pride in his work and may have a part in improvement of the system. Absenteeism and mobility of the work force are largely the result of poor supervision and poor management” (Deming, 1986, p. 83). Barriers to pride of workmanship must be removed, Deming said, if a quality product is to be achieved.

Encourage education and self-improvement for everyone. Deming (1986) sees expanding personal knowledge bases as necessary. “What an organization needs is not just good people; it needs people that are improving with education. . . . We have already seen that everybody has responsibilities in the reconstruction of Western industry, and needs new education. Management must go through new learning. People require in their careers, more than money, every-broadening opportunities to add something to society, materially and otherwise” (Deming, 1986, p. 86). An educated worker provides the company with a thinking individual who can contribute to the improvement of the company and to the worker’s community.

Take action to accomplish the transformation. In his fourteenth and final point, Deming (1986) states that management must set out a plan to implement the above 13

points in every activity and every job as part of the process. The process must start as soon as possible “to construct with deliberate speed an organization to guide continual improvement of quality” (Deming, 1986, p. 88). Continual improvement of quality, said Deming, will result in success for the company.

Implementation of TQM Practices in the United States

Joseph M. Juran.

When United States industries have decided to implement TQM, they have often turned toward Joseph M. Juran and Philip B. Crosby for practical approaches to Deming’s system. Juran and Crosby are seen as providing the practical application of Deming’s Total Quality Management (TQM) practices. Juran’s Control Handbook (1962) and Quality Planning and Analysis (1980) define the process of quality for management on two levels: the mission for the business and the mission for the individual departments. The mission for the business as a whole, as proposed by Juran, is “Fitness for Use” by customers. “Fitness for Use” is said to be determined by a product’s design; the degree to which the product conforms to the specifications of that design; the product’s availability, reliability, and maintainability; and the field service that accompanies the product. The mission of individual departments in the firm, according to Juran, is to work in accordance with specifications designed to achieve fitness for use. Juran describes the process for achieving fitness for use as a perpetual spiral of activities that includes (a) market research, (b) development, (c) design, (d) planning for manufacturing, (e) purchasing, (f) production process, (g) inspection and test, (h) sales, (i) and is followed by customer feedback through market research which

begins the spiral over again. Each of the functions in the spiral makes use of a body of specialized technological knowledge and specialized quality-related knowledge (Total Quality Management History, 1995).

According to Juran, competent senior management's focuses for a quality process include (a) quality control and control sequence which primarily attacks sporadic problems, (b) quality improvement and the breakthrough sequence which primarily attacks chronic problems, and (c) quality planning and the annual quality program which institutes managerial control and review over the quality management process. Chronic problems are said to be solved by studying the symptoms, diagnosing the cause, and applying remedies on a project-by-project basis to improve quality (Total Quality Management History, 1995).

Philip B. Crosby.

Through his books Quality is Free (1979) and Quality Without Tears (1984), Crosby developed the "zero defects" program. The goal of a quality program, says Crosby, is to produce a product that is error free. According to Crosby, error free products are quality products. To achieve the zero defect program, Crosby's quality improvement process is embodied in the "absolutes of quality management" and the basic elements of improvement (Total Quality Management History, 1995, p. A-7):

1. The definition of quality is conformance to requirements. Requirements are set out by management, which are ironclad.

2. The system for causing quality is prevention. The first step toward defect and error prevention is to understand the process by which the firm's product or service is produced.

3. The performance standard is zero defects.

Crosby also characterizes companies that are serious about quality as having five common characteristics (Total Quality Management, 1995, p. A-9):

1. Quality improvement is an ongoing, everlasting process.
2. Quality education and philosophy begin at the top of the organization.
3. Quality control departments believe in zero defects.
4. Quality training materials and instruction must be excellent.
5. Management is patient and never decreases effort or enthusiasm for quality improvement.

If higher education implements TQM practices, how can it produce zero defects in its product? The product of an institution of higher learning is an educated person who cannot be broken down and sent for retooling as a product made of steel or plastic or computer chips may be. This suggests that the "parts," or people, entering into the process of higher education must be error free from the beginning. Theoretically, "error free" students, students with the highest probability of learning the educational system with the knowledge deemed necessary, will come from restricted entrance requirements (see "Implementation of TQM at the classroom level" and "Gatekeeping" later in this

paper). Strict tolerances for entrance into the TQM system of higher education cannot possibly be upheld in the same way as a TQM system in manufacturing, because the requirements would be too high, resulting in too few students allowed into the system.

Juran and Crosby Compared to Deming

Crosby places little emphasis on statistical quality control techniques in contrast to Deming and Juran. Crosby is more focused than Deming on management and organization of the company or corporation than on tools or outlined methods for implementation of TQM practices. For Deming, quality is a predictable degree of uniformity and dependability, at low cost, and suited to a particular market. Deming's emphasis in TQM is on management's commitment, participative management style, and continuous improvement. Without management's commitment to change, said Deming, there cannot be successful implementation of TQM practices. Deming does not say that following a prescribed method of TQM structure will result in instant success. Deming said there is a process of trial-and-effort to problem solving that anticipates mistakes in initial approaches as part of the learning process.

Juran's quality is based on the concept of "fitness for use" (Suarez, 1992). For Juran, quality is implemented on a project-by-project basis and is implemented when and where it is needed. According to Juran, there needs to be a breakthrough in attitude on the management and the worker's part for quality to be achieved. The process of quality improvement is the most useful to the middle manager in Juran's system. The middle manager is in contact with those who do the work and is best able to communicate to the upper management. Juran ultimately believes that fixing quality problems are a journey

from symptom, to cause, to remedy. Deming would agree with Juran in viewing the process of TQM being implemented throughout the production process.

Crosby's concept of quality is based on conformance to requirements laid out by management (Crosby, 1979). Crosby's concept of quality is approached from the top-down or from management down to worker. According to Crosby, for successful quality changes to be implemented a change in the business culture is needed. The change in culture is to view business in terms of a quality product, since the conceptualization of "quality" is a new management philosophy. Crosby's management structure views the ultimate goal of quality programs as achievement of zero defects in products. In Crosby's view, zero defects result in a quality product. Deming would not completely agree with Crosby's conceptualization of TQM practices. Deming, presumably, would have agreed that the concept of "quality" is new to the American marketplace and that a clear commitment from management is necessary. Deming, however, would have said that quality requires a systematic need for change and acceptance. Deming would want zero defects in a product but would stipulate that zero defects in a prescribed product does not necessarily make it a quality product. A quality product meets the needs of the consumer. Only the product's consumer can determine if it is a quality product; even then the consumer may require changes to be made at the design phase of the product's production. Zero defects in a customer-designed product would meet the definition of a "quality product."

Juran's (1980) practices of TQM best fit the ideas set out by Deming (1986) in Out of the Crisis. However, it is Crosby's (1984) design for production of a quality

product which is seen the most often in production today. It is a conceptualization of TQM which places the managerial staff as the head of production and all of its outcomes with workers and middle management. Workers and middle management are expected to buy into the ideas of TQM that are dictated from the top. Workers and middle management then see TQM as another management decision made and carried out with little concern for what production staff has to say about the process.

Theory X, Theory Y, Theory Z

Theory X

Several theories have been used to explain the structure and function of United States businesses as well as their successes and failures. Three of these theories are called Theory X, Theory Y, Theory Z. Taylor's (1911) The Principles of Scientific Management is recognized as developing the essential ideas behind today's production worker. Taylor is credited with developing time and motion studies for each "active unit" on a production line. Workers were not seen as people, but as units for production which could be tuned like a machine for maximum production. Taylor's work, and the work of others associated with the "scientific management" movement, are said to be responsible for the management style still prevalent in many United States firms (Leibenstein, 1987). This management style is seen in individuals who view workers as a "production unit" interchangeable with machines. Mac Gregor (1960) calls these individuals "Theory X" managers-- "[I]t is the modern version of the master-servant concept that characterizes labor-management relationships at the beginning of the Industrial Revolution and has left its imprint on labor-management practices today" (Sethi, Namiki, and Swanson, 1984, p.

141). Theory X is said to prevail in most American firms. Theory X is often accomplished with an effort by employees “to assert rights and to establish entitlements in a working environment they consider hostile” (Sethi, Namiki, and Swanson, 1984, p. 141). Theory X is most often seen in union shops across the United States.

Theory Y

“Theory Y” communicates a managerial concept of “employee participation” (Sethi, Namiki, and Swanson, 1984, p. 136) to improve organizational productivity and staff morale. In the United States, there is a movement towards an emphasis “on increased subordinate involvement in specified on-the-job decisions at the operating levels of the corporation or participative management” (Sethi, Namiki, and Swanson, 1984, p. 136). Participative management implemented in the United States represents a deliberate management decision to delegate leadership authority to lower-echelon staff “but only on a limited basis. . . Touted as a new approach to quality control and an answer to the competitive threat of the Japanese, the system places responsibility for quality control on the production worker” (Sethi, Namiki, and Swanson, 1984, p. 137). Lack of quality is blamed on the production worker rather than on the production process itself. This placing of blame on the worker differs from Deming’s TQM principle, which places responsibility for quality control on the management directing production and implements feedback from the workers. The implementation of Theory Y “is limited in scope and is oriented toward production line operations” (Sethi, Namiki, and Swanson, 1984, p. 137) only and is commonly used in “quality circles” (George, 1983), which have been shown to have limited success (Total Quality Management History, 1995). Deming

has said that quality must be a system-wide process. Presumably, workers under Deming's theories of TQM should know that they have the ability to effect a change in all areas of the product they are producing and that the workers are a valued member of a team. If this is not accomplished, quality circles and other processes of limited worker input, tend to fail, and workers will continue to fight for rights and entitlements (Deming, 1986).

Theory Z

A third approach of management style, Theory Z, comes from Ouchi (1981).

Ouchi states that low productivity in the United States will not be solved with the current United States approaches. The United States currently uses monetary and fiscal policies or greater investment in research and development to promote growth. As reported by Sethi, Namiki, and Swanson (1984), Ouchi's theory asserts that productivity is a problem of social organization. According to Ouchi, "[w]e need a corporate culture that engenders employee loyalty and cultivates trust and cooperation, greater worker involvement, and motivation to excel, and thus greater productivity" (Sethi, Namiki, and Swanson, 1984, p. 265). "Theory Z" has a set of assumptions asserting strong cultural norms and values which influence individual behavior and organizational goals.

"Managers are obliged to create a system of incentives to bind employees to the organization and create intense loyalty" (Sethi, Namiki, and Swanson, 1984, p. 265).

These positive incentives, says Ouchi, transform the organization into a "tribe," "clan," or "family" with its own ethos and culture. They give the employee "a sense of community, security, and autonomy; contribute to job satisfaction, and thereby lead to greater

productivity” (Sethi, Namiki, and Swanson, 1984, p. 265). Ouchi contributes the principles of Theory Z to the success of Japanese business.

Deming would agree with Ouchi that the workers need to have a non-threatening environment to work in, with central organizational wide commitment to quality; however, monetary and fiscal policies may be needed to achieve these goals as well as research and development as the customers need. Deming (Table 1) would not agree with the need to find ways for “managers. . . to create a system of incentives to bind employees to the organization and create intense loyalty.” Deming believed that providing a positive workplace environment (which includes on-the-job training and education with an interactive staff throughout all levels of production) would create its own loyal workers.

As previously indicated, businesses in Japan embraced TQM after World War II. Management in Japan adopted “one common aim, namely, quality” (Deming, 1986, p. 3). Similar to higher education and the military with no lenders nor stockholders to press for dividends, “this effort became an undivided bond between management and production workers” (Deming, 1986, p. 3-4). The Japanese manager adopted a constancy of purpose: the Japanese corporate credo became one for which a company should become the world’s most efficient provider of whatever product and services the company offers. “Once it becomes the world leader and continues to offer good products, profits follow” (Deming, 1986, p. 99). There were no shareholders to please after World War II, and Japanese firms were free to operate on behalf of another constituency--their workers.

Table 1: Comparison of Deming, Juran and Crosby.

| | Deming TQM Theory | Crosby practice: #1 in use | Juran practice |
|--|---|--|--|
| Mission: | quality product dictated by customer satisfaction | Zero defects | Fitness for Use |
| Management theory: | predominately Z with aspects of Y | X | Predominately Y with aspects of Z |
| Focus of TQM: | commitment of management to implement organizational wide change through all levels | Absolutes of : 1. conform to requirements 2. cause of quality prevention 3. perform to zero defects | 1. quality control for sporadic problems 2. quality improvement for chronic problems 3. quality planning for managerial organization |
| Use of statistical quality control: | yes | little emphasis | yes |
| How TQM is utilized: | Trial and Effort with no prescribed method of implementation | Prescribed methods | Project-by-project; when and where needed; symptom to cause to remedy |
| Most useful to: | whole organization | management | middle management |
| Ultimate goal of quality: | Customer satisfaction which may be through zero defects in product | zero defects | customer satisfaction |

Large businesses were run primarily for employees, who “in traditional legal terms, are the ‘beneficial owners’” (Deming, 1986, p. 100). Employees and their employers hypothetically benefit from quality practices. Today, the conceptual practice of becoming the sole, efficient provider of a product to the world holds in many Japanese companies. However, Japan, an active trading force in the world economy, is

succumbing to pressures from company stockholders to turn a greater profit. Japanese companies, like most companies worldwide, are looking to their managerial practices to decide how they may stay leaders in their chosen fields while pleasing their stockholders. Costs per unit once again take center stage with issues of its quality conceptual partner, Total Quality Management, not far behind.

Range of Compensation

Quality and pride in workmanship also become an issue when compensation and salaries are discussed in corporate America. The 1990s have seen a reiteration of workers who find that their loyalty to a company and pride in workmanship are being “rewarded” with lay-offs and early retirements. At the same time, workers are seeing corporate CEOs and presidents receiving huge salaries and large bonuses for downsizing the company. The economy of the 1990s has seen the stagnation of wages while presidents of companies continue to collect huge salaries and bonuses, resulting in the workers often questioning how valuable the management’s work is to the company in comparison to their work. Workers do not see management salaries being comparatively ratioed to worker salaries. The workers see management salaries on average at 120 times that of manufacturing workers, as compared to a mere 35 times that of manufacturing workers in 1974 (Wayne, 1995). If corporate America is using the principles of TQM appropriately, then there is a need to utilize the principle that management is part of the system and not above the process of production; management, therefore, should be compensated in proportion to the line workers of their companies. Some corporations have utilized this concept of comparative compensation for example, at the “Ben & Jerry’s” corporation of

Vermont, which produces gourmet ice creams distributed worldwide (Salas, 1995), CEOs salaries can be no more than seven times that of the lowest paid worker's salary of about \$23,000. In this company, pride in workmanship and quality are seen as being high for the average worker.

Other businesses are also being held accountable for the quality of the product they produce. Businesses want highly-trained graduates and are asking what guarantee they have when hiring a college or university graduate. Students and their families, as consumers, also have certain expectations of higher education. These expectations have resulted in students and their families asking how colleges and universities are utilizing the money they receive from tuition, and what guarantees they receive for the investment. This expectations of quality has resulted in institutions of higher learning looking to the practices of TQM to answer these questions.

Issues of Quality in Education

Implementation of Total Quality Management (TQM) has found its way to higher education as a proposed method to improve the education coming from American colleges and universities (Schwartzman, 1995) and to improve services to students (Heverly, 1991; Wolverton, 1993). TQM is seen as a tool for attracting students to institutions of higher learning as the pool of traditionally eligible students to attend these institutions has declined (Freed, 1994). Important to TQM usage is an assumption that professors and instructors are implementing quality feedback and quality processes in their classrooms (Bateman, 1993). However, progress in implementation of TQM practices within the classroom outside of business colleges has been slow. Part of the

difficulty has been, as it was with United States business, a belief that institutions of higher education are not in need of change. Implementation of TQM does require a change in the organization's culture (Hazzard, 1993; Hertzler, 1994) and promotes a long-term strategic look at an organization (Steffy, 1994). At the same time, implementation of TQM requires educating the organization's members, in this case educators, that the goal is not to take away their academic freedom (Thor, 1994). The taking away of academic freedom would be a fundamental change to the culture of higher education, which is not TQM's goal. The goal of implementing TQM in higher education is said to be improving the education provided to students by improving the exchange of ideas. This does not go against the existing culture of higher education since it already is a goal of the college or university. The main goal of TQM is to work within the culture of an organization.

The culture of American institutions of higher learning accept the ideas of freedom to teach and the freedom to learn (Balderston, 1995). These ideas contain the freedom to inquire, which universities, in large measure, support and facilitate. According to Balderston (1995), "[p]roductive scholars drive themselves hard, [and] make heavy demands for personal autonomy" (p. 47). TQM's goal of working within the culture of an organization will find heavy opposition to implementing a managerial framework which threatens this culture. The existing culture is said to already embrace personal autonomy with "each field of academic interest develop[ing] its own canons of method, rigor, and style of reporting. . . . Each field has understood standards of care and competence for the assembling of data or the investigation of sources and for the

construction of theory or interpretation” (Balderston, 1995, p. 48). Any suggestion that quality is not already part of an academic’s work will undoubtedly receive a barrage of arguments against implementing TQM.

It can be argued that the concepts behind TQM already exist at some level within education and business. In education, the concepts of TQM are seen through exchange of ideas within the classroom and through information dissemination of outlooks throughout the college or university. However, it is the goal of TQM to see TQM used throughout an organization and not in selected areas. One of the freedoms within academia which is intrinsic to the way higher education operates is the questioning of assumptions. This exchange of ideas is not one which business has previously utilized. Business does not have a tradition of questioning assumptions or outcomes, and changing the business environment to accept an exchange of ideas may prove a challenge to TQM acceptance.

Implementation of TQM at the Classroom Level

At the classroom level, implementation of TQM practice would require students to become active information providers in the classroom. This can bring about conflict within the classroom as a student may choose not to participate. Such a requirement could presumably interfere with students’ academic freedom; They have a right not to respond. TQM would, however, require students to provide feedback to the professor as to the students’ comprehension of classroom instruction and assignments, appropriateness of facilities, and suggestions for future expansion of course material. Professors would provide reverse feedback, including, but not limited to modification of the course when

necessary, answers to specific questions, elaboration of obscure points, clarification of grading systems, fuller comments on student papers or cases, additional references, and use of outside speakers (Bateman, 1993).

Implement of TQM in education requires the acceptance of principles of TQM in classroom practices that may be foreign to educators as well as administrators.

Presumably one of the more difficult concepts for higher education to accept is that the "customer" defines quality. The customer for higher education can be defined as the student. Students may misdirect their consumerism of higher education because they do not know what it is they need, or students would direct their consumerism towards areas that may have limited usefulness for them. Misdirection of consumerism toward an area of limited usefulness can be seen when admissions to professional schools are restricted to a set number of students each year. This limitation of enrollment can result in students attempting to gain admittance to schools that already exclude them from entering based on prior selection criteria of which the student may have no knowledge of the criteria. Limited admission to a professional school does not allow the student to become a consumer of the product (to become a professional in a given area), which sometimes resulting in a misappropriation of the student's time and money. Professional schools would argue that this is not the reason for the selection process.

Professional schools limit the number of students eligible for a profession by setting specific or unusually high standards that exclude applicants. Forty-one United States medical schools on February 17, 1997, agreed to limit their enrollment in exchange for increased federal funding. The American Medical Association on February 26, 1997,

recommended that medical schools restrict the number of foreign students accepted into United States medical school to decrease the number of practicing physicians in the United States. The professional schools presumably will argue that the standards are high to ensure successful completion of the curriculum and to limit the number of entering professionals to keep the market from being glutted (Tarlov, 1995). It could also be argued that the student applicants classify themselves as potential consumers; they do not actually become consumers until they become students. However, the practice of students controlling the content of the classroom is not an all-together unheard of process. Teachers in the ancient Greek educational system were at the mercy of the student who paid them. Further, students in graduate level classes, particularly seminar classes, often are partners in classroom curriculum content.

If TQM is to be successfully implemented, and done so with the highest regard towards its principles, it must also take into consideration the difficulties of extending its business-based principles into the existing structure of higher education. TQM would have to address the concern of the student. The students, as customers, would have certain expectations as to the outcome of their education. Students, under the principle expectation of receiving their education from the quality faculty they chose by attending a particular college or university, would often expect their classes to be taught by an expert in their field of study rather than by a lesser qualified graduate assistant. Students as customers would presumably want quality through low faculty-to-student ratios, and they would expect access to student services which were responsive to their needs.

If the customer is defined as the community which the institution's students will work, within then the observation that technical schools' curriculum is often established by the services it will provide to the community is an accurate one. The setting of technical school curriculum to fit the needs of the community "does not suggest that students should hold sole proprietorship over content determination but only that they be involved as active and creative participants in the educational process" (Thor, 1994, p. 3). The "students as customers" analogy is an attempt to improve the institution from the perspective of the student by including the student in the informational and decision-making process. TQM practices in higher education do not, however, imply pandering to student satisfaction or short-term expressions of needs in the classroom, where a professional educator's judgment about the requirements of learning, society, future employment, and the student's own longer-term interests must be weighed (Gallagher, 1995). TQM is said to be facilitating implementation of the educational process, while providing the student with a valued education. Under the use of TQM in higher education, the student, the community for which the student will work, and the employer can all be defined as the "customer."

Most faculty members will agree that anything to streamline administration is a good idea (Marchese, 1991), but they will balk at the idea of change in their classrooms (Gallagher, 1995). The idea of improving classroom interaction is, however, nothing new. Assessment is already used in the classroom when faculty evaluate students and through program evaluation (Gallagher, 1995; Lamson, 1994). Students already provide feedback to faculty through end-of-the-semester or end-of-the-quarter evaluations. The

concepts of TQM take the evaluation process further through use of on-going feedback from students, possibly through use of two minute feedback papers, fast feedback questions, and what-did-you-learn-today reports (Bateman, 1993). Students provide educators with information on how they are progressing in a class that can allow educators to move quickly through material the students have grasped and provide additional material when students are having difficulties.

TQM is said to be the framework which can bring about systematic change; it does not appear to threaten any particular discipline nor require faculty to discard any particular techniques, but rather to use TQM as an enhancement technique (Thor, 1994). Perhaps any change process is seen as threatening to those who intuit that the change may be unfavorable for them. The change can be as simple as a change in status, e.g., a professor may see himself as omniscient in the presence of students who form a lesser caste. As presented by Bateman (1993) on the success of implementation of TQM practices at the Chicago Business School in Illinois, "professors have both the self -- interest and capability to improve their own courses. With respect to the overall curriculum, however, they often see their interest as that of defending the place of their own courses in the overall curriculum" (p. 22). TQM is said to provide a way to offer the formation of cross-functional teams to use TQM tools "to understand what needs to be done in the overall interest [of the university] and to provide support for implementation of recommended changes [in curriculum design]" (Bateman, 1993, p. 22).

The concept of restructuring higher education to form cross-functional teams to meet the needs of the university and our society in the coming century is an area which is already being researched by the RAND corporation (Benjamin and Carroll, 1993, p. 1):

Higher education is clearly one of America's greatest strengths. But the entire sector faces serious problems, including widespread retrenchments, dramatically rising tuition, and growing concern about quality. . . . [T]hese problems, though important in their own right, are symptoms of a more fundamentally malady: the systems used to allocate resources within and among higher education institutions cannot cope with a rapidly changing environment. That environment – shaped by new and changing demands, limited or declining resources, and escalating costs – clearly calls for reallocating resources among functions. The current system is inherently unable to do that.

Many of the ills faced by higher education are perhaps part of a larger societal context. One might conjecture that as persons in society age they become more concerned with their needs as aging citizens, than with the continuity of the society itself; this would particularly be true in societies that have become fractionalized. In such circumstances, housing and medical costs compete more strongly for resources. It can be said that our aging society prefers to allocate funds for present needs such as medical costs and housing, rather than fund education, which is an allocation for the future. Others would argue that we need to fund the future of our society through child-related

food and health programs, and other support, if we are to have students ready for our educational system.

The current educational system has developed over many decades, with individual academic departments unlikely to view other departments or other services such as physical plant operations as having similar restructuring and financial problems. Under these stresses, all areas of a university may question even the most basic and apparently neutral information and analyses. An often heard refrain from departments losing students is, "You can't go by just numbers alone." "So the process of reform, and the distribution of power under the reformed system, are at least as important as the new system's goals, information, and result. . . . Thus, the new system can be neither bottom-up nor top-down; it must be both" developing shared criteria which is central to the practices of TQM (Benjamin and Carroll, 1993, p. 4). The organization, in this case the college or university, must be seen as one large institution with all parts working together rather than as segmented, isolated parts.

Gatekeeping

The development of a shared idea of what the higher educational experience should entail assumes a shared view among faculty and administration as to what that experience should be. Indeed, in fairness, students and future employers might also play a role in this process; however, this assumption appears to be invalidated when entrance into institutions of higher education is considered. Admissions offices have the job of deciding who will enter a college or university, the job of the "gatekeeper," which is based on many factors including academic reports, test scores, and recommendations.

These gatekeepers consider the undergraduate experience to be the first step to becoming a professional in a chosen field, with extracurricular activities and workplace experience having a strong influence on success in that chosen field (Barker, 1994). The gatekeeper is considered to be the expert at the top level, who has the power to admit or decline a student. More recently, the addition of affirmative action demands have moved the admissions process to an even more political level than it formerly occupied with its practices of inclusion or dismissal. Acceptance may ultimately dictate which students will succeed in their chosen profession, particularly when admittance is not granted to a professional school, closing off the road to professional licensure. While the decision to accept or decline a student for admission to a college or university often involves a group of people, it often does not occur in a team environment. An academic department may never see an application if the student does not attain test scores or a grade point average deemed necessary by the admission staff. One might presume that faculty accept the admissions standards as representing the lower limits they need to consider for a successful student. Not looking at the whole applicant's abilities and accomplishments would go against TQM practices, which emphasize looking at the whole rather than the parts.

The United States Armed Services are in the arena of gatekeeping regarding their recruits. A recruit must pass specific physical requirements before the recruit may be considered for service (MW-FAR Form 94-R, 1994). There are further gatekeeping efforts through aptitude and abilities testing, which continue into Basic Training. Recruits can be deemed unacceptable for further training in an area based on one test

score, rather than on the whole package of the person. Conversely, it may not be until later in their course work, once accepted into a training area, that the recruit is deemed incompatible or incapable of completing a training course. This incompatibility, or incapability, may have been recognized earlier by looking at the whole package rather than one test score. The role of gatekeeper is achieving additional powers in the United States military as the number of Active Duty forces are reduced and as a range of positions are being automated. This allows recruiters to be more selective in their admissions policies. In the past, a new recruit may have had childhood asthma or a long ago healed broken bone; these conditions would have been considered unimportant for military service. In today's recruitment process, medical histories can now prevent active service in the United States military. An often heard refrain around a military base is, "Heck, half of the people on this base couldn't qualify under these new restrictions!" Legitimately, many of these new restrictions have come about as a result of aggravated medical conditions which manifested themselves during the Gulf War, necessitating personnel being sent home from active duty positions. However, it can be argued that the percentage of personnel sent home for an aggravated medical condition are not significant compared to those sent home during any other military action. The resulting medical restrictions during peacetime translate to a shortage of incoming "medically fit" personnel for the military services.¹ Gatekeeping can arguably have a legitimate position within an organization; however, when it eliminates necessary personnel or students it could also be inferred that the system has a problem that needs rectification.

Higher Education Reward Systems

Beyond the area of gatekeeping in higher education in TQM are the challenges of faculty identity, reward systems, and the tenure systems (Wolverton, 1993). Faculty identities at many institutions of higher education are based on their disciplines and subsequently their departments (Hazzard, 1993). This is contrary to TQM practices, which would require academic departments to work across disciplines (Bateman, 1993). This is not to imply that interdisciplinary and cross-disciplinary approaches have not occurred before implementation of TQM practices, nor that faculty have not recognized the need for interdisciplinary and cross-disciplinary approaches to research; however, these efforts may not have been recognized by administration for their usefulness in quality issues (Hazzard, 1993). One could conjecture that faculty might implement a Total Quality Education apart from a reticent administration. A cross-functional team approach could enrich the curriculum and develop of an institutional culture; it does require time to develop for both faculty and administration to feel comfortable with the process.

Some aspects of the reward system of colleges and universities can be seen as inconsistent with the conceptualization of quality improvements. Colleges and universities perhaps might recognize that improvements in quality of teaching may not fit into the standard molds of criteria for granting tenure (Thor, 1994). Most reward systems recognize individual achievement rather than team efforts. A clear understanding of what the institution is looking for in its goals and through its tenure system would be needed, as the system can often be ambiguous. If improving the quality of teaching is the desired

aim of the institution, then basing tenure on a faculty member's research, for example, may not provide the results desired (Thor, 1994). Some reward systems do recognize teamwork. This is exemplified by faculty who are involved in research activities who often share authorship in the various research publications, or by Nobel Prize recipients who receive their award for their teams of researchers. On the other hand, team research may be seen as being of less worth in the tenure process; arguably the lack of change in the university might be to begin to create the "saber-tooth curriculum". A "saber-tooth curriculum" resists change of any kind because it is seen as a traditional core of knowledge which must continue (Peddiwell, 1939).

Academic management or academic administration in most universities and colleges are separated physically from the process of education and often utilize different goals. Implementation of quality assurance schemes requires that physical and conceptualization separation be eliminated. Administration cannot be "those people across campus" who hold the purse strings and seemingly mandate from the top expecting change below. This would also hold true with the United States military. The command structure, according to TQM practices, cannot successfully mandate change while being physically and philosophically distanced from those they command. If TQM changes are to be made in the products produced by the military for the state they serve, as in the case of the National Guard or for the United States at the federal level, physical and conceptual separation needs to be eliminated. TQM practices declare that production goals should not be at odds with each other in academia or at the government provider level. If TQM is to be a positive change agent, funding should not be severely cut or

TQM is implemented at colleges and universities, or at the military level, as federal and state budgets are debated.

TQM and the Air National Guard

TQM was mandated for implementation within the United States Armed Services in 1988 by the Department of Defense (Marchese, 1991). In implementing this mandate the 119th Fighter Wing adopted the definition of its TQM initiative from the Quality Air Force's The Quality Approach (1994): "The Hooligan Initiative is a leadership effort to sustain an operating style which creates a working climate that promotes trust, teamwork and continuous improvement in everything we do" (Rising and Henderson, 1995, p. 7). Leadership of the 119th Fighter Wing operates under the assumption that there are various perceptions of quality and that no one person or organization has a single good definition (119th Fighter Wing, 1996). TQM training presents definitions of quality from the General Service Administration, Human Resources Laboratory, Boeing Aircraft, Organizational Dynamics, Inc., the Juran Institute, Departments of Defense, United States Air Force, the National Guard Bureau, and the Air National Guard (119th Fighter Wing, 1996, p. 7). Implementation of TQM within the 119th Fighter Wing is said to not go against the existing culture of the United States military (Nagel, 1994). This change in management structure is seen by the 119th FW as (a) long term, (b) a culture change, (c) the responsibility of top management, (d) a structured approach to identifying and solving problems, (e) conveyed by action, (f) practiced by everyone, (g) customer focused, (h) addressed by problem-solving teams, and (i) concluded in fact-based decisions (119th Fighter Wing, 1996, p. 6).

As higher education has customers, so does the 119th Fighter Wing. The 119th's customers are seen as "internal" and "external." Internal customers are (a) peers, (b) Commanders, (c) subordinates, (d) family members, and (e) others within their organization. External customers are (a) active military forces, (b) United States citizens, (c) National, State and local governments, (d) business and industry and (e) other governments (119th Fighter Wing, 1996, p. 26). External customer relations are evaluated under the Quality Air Force Criteria of the Air Combat Command (ACC) Assessments Guides (ACC, 1994) which "examines the organization's relationships with customers and its knowledge of customer requirements and of the key quality factors. Also examined are the methods to determine customer satisfaction, current trends and levels of customer satisfaction, and the results relative to similar organizations" (ACC, 1994, p. 26). The practice of TQM implementation by the members of ACC, of which the 119th FW is a member, is to follow quality guidelines that agree with the practice of TQM. (See self-reporter executive assessment Appendix B, 119thFG NDANG).

One of the first practices an organization may undertake to understanding what methods it will use to establish a quality product is to establish the goals of the organization. The establishment of goals often leads to a written mission statement which embodies the standards of the organization.

The Goals of the 119th Fighter Wing

The Mission Statement of the 119th Fighter Wing according to the "119th Fighter Group² Self Assessment Summary" (1995) is to, "[p]rovide accessible combat ready

professionals, trained and equipped to accomplish air sovereignty operations and other state and federal tasking” (119th Fighter Wing Self Assessment Summary, 1995, p. 1).

The Mission Statement of the 119th Fighter Wing was further elaborated in 1996 through the Quality Office as (ACC, 1997, p.1):

The 119th Fighter Wing mission is to protect the air sovereignty of North America. The unit is equipped with the F-16 A/B Air Defense Fighter, and is tasked to mobilize, generate, deploy, and execute wartime missions under the direction of the North American Aerospace Defense Command. In peacetime, the Wing maintains continuous 5 minute alert at March Reserve Air Reserve Base, California, and provides disaster relief, civic assistance, and other State missions directed by the Governor of North Dakota.

Part of the 119th FW’s mission is to be an active member in the Air Combat Command (ACC) as part of the Air Force peacetime and wartime strategy whose Mission is as follows (ACC, 1997, p. 1):

Air Combat Command (ACC), established 1 June 1992, with headquarters at Langley AFB, Va., operates Air Force bombers and CONUS-based, combat-coded fighter and attack aircraft. Organizes, trains, equips and maintains combat-ready Forces for rapid deployment and employment while ensuring strategic air

defense forces are ready to meet the challenges of peacetime air sovereignty and wartime air defense.

This mission includes (ACC, 1997):

Responsibilities: Acts as primary provider of air combat forces to the warfighting commands and as the proponent for fighter, bomber, reconnaissance, battle-management, rescue and theater airlift aircraft; and command, control communications and intelligence systems. Provides nuclear forces for U.S. Strategic Command, as well as theater air forces for U.S. Atlantic Command, U.S. Central Command, U.S. Southern Command, U.S. European Command and U.S. Pacific Command. Provides air defense forces to the North American Aerospace Defense Command. Operates certain air mobility forces in support of U.S. Transportation Command. Prepares combat air forces to globally implement national policy.

In the 119th FW's practice of complying with the directives of ACC, the 119th FW has attempted to identify its "customers." As with education, it is often difficult to define who the customer is; however, the 119th FW has its own definition of its customers or COPIS [Customers, Output, Process, Inputs, Suppliers] (Unit Self Assessment, 1995, p. 4):

Customers. NORAD (North American Air Defense Command), National Guard

Bureau, and the Governor of North Dakota

Output. Mission readiness

Processes. Training, planning, mobility, maintaining, recruiting, retention

Inputs (or resources). People, dollars, plans/Directions, equipment, facilities, supplies

Suppliers. The community, headquarters, depots, National Guard Bureau, US Air Force

The 119th FW utilizes this COPIS “to provide a base-wide commitment to the quality culture” (Unit Self Assessment, 1995, p. 4).

As is often the case, local practices of policy do not necessarily equate to the practices which were set out at the national level. TQM has been directed for implementation by all armed services however, the management practices at the National Guard level, specifically at the 119th FW, do not necessarily acquiesce with the strict practices of TQM. This is seen because members of the 119th FW, while trained to obey legitimate orders and follow standardized procedures, recognize that success of any mission “demands the use of ingenuity, initiative, adaptation, teamwork, judgment, accountability, and a liberal dose of ‘good old common sense.’ Empowerment is the manifestation of all these elements. . . .Empowerment is about people placing confidence and trust in people enabling people to excel” (119th Fighter Wing, 1996, p. 30). TQM practices are funded and mandated within the structure of this group. It could be said that mandating TQM can be done because the mandating of issues is part

of the cultural tradition of the military. The 119th FW does, however, have an underlying culture of goal attainment which is seen as a negative towards achieving an effective TQM program according to Deming (1986). Hanging on several walls within the Air Base of the 119th Fighter Wing were signs entitled, "North Dakota Air National Guard Goals." When the personnel within Total Quality Office of the 119th FW were asked of the origin of this list of goals, no one knew. The goals were:

1. Continue outstanding weapons and flight safety records
2. Reduce ground safety accidents by 10 percent
3. Maximize representation from all squadrons during biennial deployments
4. Create deployment checklists for unit use
5. Maximum use of deployments for training
6. Earn "OUTSTANDING" on next Operational Readiness Inspection
7. Increase areas rated "OUTSTANDING" by 15 percent over previous inspection
8. Have no areas rated below "SATISFACTORY" in any inspection
9. Win one major USAF/NGB award each year
10. Establish and implement base-wide training program
11. Introduce and implement principles of Total Quality Management

The practice of TQM was listed as a "goal" rather than as an integrated philosophy. The very placement of TQM as a goal can be argued to be part of the reason that TQM will

not succeed at the 119th FW, since management does not understand the process of implementing TQM and still uses goal attainment as one of its management strategies. Goal attainment, according to Deming (1986), must be eliminated as part of a successful TQM system. If the command structure of the 119th FW does not understand this as part of Deming's "14 Points of Management," then the command structure does not comprehend the ideals of TQM. The command structure therefore cannot expect middle management and workers to comprehend the ideals of TQM, which will result in a failure of the process of quality improvement.

Mission Statements in Higher Education

The mission of a university is traditionally defined as "teaching, research, and public service" (Balderston, 1995), with each college and university developing its own mission statement to direct its day-to-day operations. Just as businesses look to their managers or the military to its generals, the leadership of an institution of higher education looks to its administrators to take the lead and direct company resources and provide a structure by which to achieve the mission laid out. According to Balderston (1995), the most important task of university management "is to guide the institution's definition of its mission and scope, determining changes in the array of programs and in their scale of quality. For institutions that are affected by state or national schemes of planning, coordination, and control, the guidance includes negotiation with the superstructure" (p. 17). Management as guide rather than ultimate dictator of implementation is seen as a key concept of TQM. This practice can be equated with practices already occurring in higher education without previous labeling as a TQM

practice. A mission provides the framework for outcomes while allowing and encouraging staff and faculty to “produce” the educated student through a variety of ways. Campus administrators/managers are already “look[ing] in two directions at once: to the relations of the university with its external environments (for sources of students, resource markets, clients, and funds) and to internal relations with the ongoing institutional processes and constituencies” (Balderston, 1995, p. 17) which are concept utilized in business practice. Campuses are sometimes conceptualized as already being run as businesses but seen as having difficulty of conceptualizing themselves as businesses at the classroom level.

Universities have mission statements, and as a comparative model the University of North Dakota, Grand Forks, North Dakota, also has a mission statement (UND Academic Catalog, 1995, p. 2) which can be compared to the statement of the 119th Fighter Wing:

The Mission of the University of North Dakota is to serve the state, the country and the world community through teaching, research, creative activities, and service. . . . The University maintains its legislatively enacted missions in liberal arts, business, law, medicine, engineering and mines, . . . special missions in nursing, fine arts, aerospace, energy, human resources and international studies.

Comparisons between UND and the 119th Fighter Wing

Comparisons can be drawn between the mission of the 119th FW and the mission of the University of North Dakota (UND). “The Mission of the University of North Dakota is to serve the state, the country and the world community.” The mission of the 119th FW is to “Provide accessible combat ready professionals, trained and equipped to accomplish air sovereignty operations and other state and federal tasking.” Both UND and the 119th FW have the mission to serve the state and the country [albeit in sometimes diametrically opposite spheres]. UND provides the state and the country with educated workers and trained professionals and the 119th FW provides trained professionals for its mission.

Hierarchy and structure of UND and the 119th FW can be viewed as similar. At UND four vice presidents and the dean of the School of Medicine and Health Sciences report directly to the president of UND (Organizational Chart of UND, Appendix C). The president of UND reports to the North Dakota Board of Higher Education, who report to the Legislature and the Governor of North Dakota, Edward T. Schafer. The state of North Dakota must uphold federal guidelines to receive federal moneys for education. Similarly, are 11 groups report to the Air Force Advisor, the Vice Commander, and the Chief of Staff at the 119th FW (Organizational Chart of the 119th FW, Appendix C). These three officers report to the local head (Col. M. Haugen) of the 119th Fighter Wing (compared to the president of UND), who must then report to the Assistant Adjutant General, the Adjutant General, and the Chief of Staff, who is also a General (compared to the State Board of Higher Education). These three Generals report

to their Commander-in-Chief who is the Governor of North Dakota during peacetime operations. Also, similar to UND, the 119th FW also reports to a federal agency that regulates national security and wartime operations through the United States Air National Guard Headquarters and the United States Air Force.

Comparisons of the “customers” of the UND and the “customers” of the 119th FW can be made. The university provides a service to the community of Grand Forks and the state of North Dakota by educating its people through academic course work and public service. UND also provides an educated workforce for the nation and beyond. The 119th FW provides services to the local community of Fargo through use of its facilities by (a) local law enforcement agencies, (b) the Civil Air Patrol, (c) Adult Education, and Defense Investigative Services, (d) and tasking unit fire fighting personnel 24 hours-a-day to respond to Hector International Airport crash and local community disaster through the State of North Dakota through medical emergency relief and national disaster relief. At the national level, the 119th FW provides national defense and global armed forces protection to the United States and other countries as assigned.

Structural comparisons can be made between the University of North Dakota and the 119th Fighter Wing of the North Dakota Air National Guard. Both institutions provide a service to customers at the local, the state, the federal level, and the national level. And both institutions, in their own ways, have received a mandate from their higher managerial level to implement Total Quality Management practices as a managerial strategy to improve customer satisfaction and products. These similarities require each institution to draw comparative parallels to themselves as compared to the

business practice of TQM as TQM was not conceived for use within higher education or the military. The comparison of higher education or the military to the business practice of TQM suggests that there are parallel comparisons to each other. As a result of the parallel situation between education and the military, it is reasonable to hypothesize that information gathered from the military implementation of TQM practices would benefit implementation within education.

Summary

United States businesses and organizations and institutions of education have come to the realization that to keep competitive they need to understand how their organization works internally and externally. Some organizations have turned to the management practices of W. Edwards Deming and his "14 points for Management" (1986). Deming's management style known as "Total Quality Management" has been adopted by the United States Armed Services and shows little indication of being exchanged for a different management practice. At the same time, TQM is making inroads in institutions of higher education among skepticism and criticism, which has in some cases, already resulted in the demise of quality programs. While some people at higher education institutions may believe that they have seen the last of TQM, it may not be possible for higher education to dismiss TQM programs in the future as ISO 9000 practices may have to be implemented. This situation may lead to higher education turning towards successful programs such as the 119th FW for guidance.

CHAPTER III

METHODOLOGY

This study constitutes a secondary analysis of a survey written by, and administered to, the 119th Fighter Wing of the North Dakota Air National Guard in Fargo, North Dakota. The secondary analysis consists of a factor analysis to determine the accuracy of subscales identified by the 119th FW, Chi-Square analysis to identify differences between units of the Fighter Wing, and a Chi-Square analysis to identify difference between the 119th FW National Guard responses compared to active duty forces.

The Survey

A 76-item instrument was devised by Major Scott Rising of the 119th Aircraft Generation Squadron and Brigadier General Allen Henderson, Chief of Staff, and a Professor of Industrial Engineering and Management with North Dakota State University, Fargo, North Dakota (Henderson and Rising, 1995). Questions for the survey were selected from the Air Combat Command (ACC) Culture and Leadership Survey (administered to active duty Air Force members) and from questions that Rising and Henderson wanted answered about their Wing's work place environment, job satisfaction, and quality initiative. The items were reported on scan sheets and were scored based on a Likert scale of strongly agree, agree, neither agree or disagree, disagree, and strongly disagree. The survey also included open ended questions of, "What are three things the

unit is doing right?” “What are three things the unit is doing wrong?” (Appendix A - complete survey).

The Subjects

The questionnaire was administered to the 1053 members of the 119th Fighter Wing, which consists of 14 identifiable units (Support, Logistics, Logistics Support Squadron, Medical, Detachment, Operations, Mission Flight Support, Communications, State Headquarters, Services, Security Police, Fighter Group, Civil Engineering, and Maintenance). The units were identified by the first four questions of the survey. The questionnaire was delivered to the members of the Wing during the May 1995 Unit Training Assembly (UTA) and they were asked to return it by the June UTA. A total of 458 questionnaires were returned to the Quality Program Office in unmarked envelopes. The return rates of the individual units are available in Table 2.

Of the respondents, 207 were “Technicians” (employed full time) with the 119th Fighter Wing, and 256 were Drill Status or employed part time with the Fighter Wing. Two respondents were unsure of their employment status. The median number of years of education completed were 15 to 16 years class (Table 3).

Data Analysis

The questionnaire (Appendix A) was originally scanned at North Dakota State University and simple statistics were requested. According to personnel within the 119th FW of the Quality Program, the initial four questions of the survey were used to identify the unit to which the person responding to the questionnaire belonged. However, this did not sufficiently provide information for the coding process to classify the respondents by

Table 2: Return Rate of Survey by Unit

| | Number in unit | Number returned |
|--------------------------------|-----------------------|------------------------|
| Support | 25 | 9 |
| Logistics | 14 | 19 |
| Logistics Support Group | 105 | 43 |
| Medical | 53 | 20 |
| Detachment One | 18 | 13 |
| Operations | 28 | 28 |
| Mission Flight Support | 32 | 14 |
| Communications | 36 | 13 |
| State Headquarters | 23 | 11 |
| Services | 39 | 23 |
| Security Police | 78 | 16 |
| Fighter Group | 68 | 21 |
| Civil Engineering | 198 | 60 |
| Maintenance Squadron | 336 | 168 |
| Totals | 1053 | 458 |

group. The response sheets were returned and a manual grouping was conducted to identify the fourteen units. Upon compilation of the groupings and the subsequent rerun of the scan sheets, North Dakota State University provided the 119th FW with a report of the simple statistics. The four questions were:

1. Which of the following BEST describes your current position? 1= Group or Squadron Commander, 2 = Field Grade Officer, 3 = Company Grade Officer, 4 = 9 Skill Level (Duty Air Force Specialty Code), 5 = Not Listed in This Group.
2. Which of the following BEST describes your current position? 1 = 7 Skill Level (Duty AFSC) , 2 = 5 Skill Level (Duty AFSC), 3 = 3 Skill Level (Duty AFSC), 4 = 1 Skill Level (Duty AFSC), 5 = Not Listed in This Group.

Table 3: Number of Years of Education

| Years of Education | Number of Respondents | Percent |
|---------------------------|------------------------------|----------------|
| 19 or more | 30 | 6 |
| 17/18 | 76 | 16 |
| 15/16 | 157 | 34 |
| 13/14 | 137 | 29 |
| 12 or less | 65 | 14 |

3. I am a member of the following Group, Squadron, Flight, etc. 1 = NDANG State Hqtrs, 2 = 119 Fighter Group, 3 = 119 Operations Group, 4 = 119 Logistics Group, 5 = Not Listed In This Group.

4. I am a member of the following Group, Squadron Flight, etc. 1 = 119 Medical Squdm, 2 = 178 Fighter Squdm, 3 = 119 Civil Engineering Squdm, 4 = 119 Services Flt, 5 = Not Listed In This Group.

Summary

In May 1996 data from the survey conducted by the 119th Fighter Wing of the North Dakota Air National Guard were released to this researcher to conduct a secondary analysis. The data was entered into a database for use with the Statistical Package for Social Science (SPSS-X) (SPSS Inc, 1988) on a mainframe computer at the University of North Dakota. A factor analysis was conducted to determine the accuracy of the subscales identified by the 119th FW with subsequent analysis regarding differences between the units within the 119th Fighter Wing.

CHAPTER IV

RESULTS

The following results are reported for the secondary analysis of the Quality Air Force survey conducted by the 119th Fighter Wing of the North Dakota Air National Guard of Fargo, ND in May 1995. These results include information from (a) a factor analysis of subscales identified by the 119th FW; (b) a Chi-Square Analysis to identify significant differences between responses from unit to unit; and (c) a Chi-Square analysis comparing the results of this survey with the results of the Air Combat Command's survey of active duty forces. This chapter also includes interviews conducted with three members of the University of North Dakota, Grand Forks, North Dakota administrative staff to establish the success of the university's Total Quality Management program.

Of the 1053 surveys sent to members of the 119th FW, 458 of the 475 which returned were used in post treatment. Only those surveys were used which contained sufficient information to allow them to be classified into a unit.

Post Treatment

Cronbach's Alpha was computed for the 64 main items ($\alpha=0.98$) of the survey (Q13 to Q76) which address the issues of TQM using the mainframe version of

the Statistical Package for the Social Sciences (SPSS-X) (SPSS Inc. 1988). Four subscales had been identified a priori:

Work Place Environment. (items 13 to 34, alpha=0.94);

Job Satisfaction. (items 35 to 53, alpha=0.93);

Communications. (items 54 to 68, alpha=0.94);

Quality Initiative. (items 69 to 76, alpha=0.90).

The survey was determined to be essentially unidimensional (a single scale) with the use of factor analysis with loadings of 0.45 or higher (Table 4) with degrees of freedom=4. Varimax rotation and oblimin rotations gave loadings on multiple factors.

Table 4: Factor Analysis

| Only factors loading ≥ 0.45 are included | Factor 1 | Factor 2 | Factor 3 |
|--|----------|----------|----------|
| Eigenvalue | 24.41677 | 3.39599 | 2.66092 |
| 13. I exercise initiative and suggest improvements w/I unit | .45493 | | |
| 14. My unit implements my ideas and/or suggestions. | .64561 | | |
| 15. regulations and operating are clear, relevant to my job. | .64740 | | |
| 16. unit willing change establish methods improve quality | .71397 | | |
| 17. unit above my unit is willing to change established | .61154 | | |
| 18. My unit has clearly defined goals | .66656 | | |
| 19. My unit has clearly defined objectives | .69597 | | |
| 20. My unit's goal are achievable. | .64922 | | |
| 21. I consider myself part of the "team" in my unit. | .69247 | | |
| 22. other members of unit say I exercise initiatives | .51468 | | |
| 23. Work activities are well planned in my area. | .58654 | | |
| 24. My unit identifies duplication of effort. | .56471 | | |
| 25. My unit takes action to eliminate duplication of effort. | .61643 | | |
| 26. My unit's workload is fairly distributed. | .60306 | | |
| 27. A spirit of cooperation and team work exists in my unit. | .71155 | | |
| 28. I received the training I need to do my job. | .66314 | | |
| 29. I have the resources I need to do my job | .55947 | .44991 | |
| 30. I am afforded the time necessary to do my job well. | .58146 | | |
| 31. I receive feedback . . . satisfied with my product/output. | .61356 | | |
| 32. My supervisor's actions show he wants me succeed | .76727 | | |
| 33. My supervisor shows confidence in my ability | .69171 | | |
| 34. My supervisor encourages me to identify nonproductive | .72636 | | |

Table 4 conti.

| Only factors loading ≥ 0.45 are included | Factor 1 | Factor 2 | Factor 3 |
|--|----------|----------|----------|
| Eigenvalue | 24.41677 | 3.39599 | 2.66092 |
| 35. I know what is expected concerning job performance. | .70914 | | |
| 36. I know my job description. | .58792 | | |
| 37. My actual duties match my job description. | .62291 | | |
| 38. The tasks I perform are free of rework and waste. | .56965 | | |
| 39. I receive feedback on how I am performing in my job | .71638 | | |
| 40. performance measured against established standards | .68028 | | |
| 41. The meetings I attend have a defined purpose. | .57414 | | |
| 44. I know my unit's mission. | .59418 | | |
| 45. I know how my work contributes to my unit's mission | .61716 | | |
| 46. The training I receive is well planned. | .73341 | | |
| 47. The training I receive is effective | .68188 | | |
| 48. I feel confident that I can execute my duties | .49564 | .47297 | |
| 49. I am confident I have the training I need | .60813 | .45723 | |
| 50. My unit has the training we need | .67236 | | |
| 51. My unit has the resources we need | .48931 | | |
| 52. My unit's performance measurements accurately | .63775 | | |
| 53. I am prepared for a short-notice deployment | .35626 | | |
| 54. My unit has effective communication channels. | .71912 | | |
| 55. My supervisor asks me for my input | .72933 | | |
| 56. My supervisor uses group meetings | .67846 | | |
| 57. My supervisor provides instructions that enable me | .74474 | | |
| 58. My supervisor tells me what is going on | .69253 | | |
| 59. comfortable saying what is on my mind | .62389 | | |
| 60. I receive recognition for doing my job well. | .68011 | | |
| 61. I receive respect for doing my job well. | .72699 | | |
| 62. I receive recognition for working with others to | .72060 | | |
| 63. I receive timely information about future unit events. | .63692 | | |
| 64. I receive enough information about future unit events. | .61880 | | |
| 65. My unit successfully collaborates/cooperates with other | .68566 | | |
| 66. collaborates/cooperates with other organizations | .64899 | | |
| 67. someone in my unit who will listen to career/job | .70213 | | |
| 68. is someone in my unit who will listen to understand | .65828 | | |
| 69. I have received training on Hooligan Initiative | .48048 | | .56578 |
| 70. I understand the basic principles of Hooligan Initiative | .50677 | | .58127 |
| 71. unit commander demonstrates support of Initiative | .65929 | | |
| 72. supervisor's actions demonstrate support of Initiative | .71078 | | |
| 73. I support the Hooligan Initiative | .55854 | | .53878 |
| 74. Initiative gives opportunity to make real improvements | .64311 | | .45540 |
| 75. supervisor keeps informed on progress of goals | .71453 | | |
| 76. supervisor interested in improvement to meet goals | .66996 | | |

A comparison between units within the 119th Fighter Wing was also conducted using a Pearson's Chi-Square analysis (Table 5) to determine if there were significant differences between responses from unit to unit.

Table 5: Chi Square between 119th Fighter Wing Units

| Df=52 | Pearson Value | Probability |
|--|---------------|-------------|
| 13. I exercise initiative and suggest improvements w/I unit | 76.86710 | 0.26817 |
| 14. My unit implements my ideas and/or suggestions. | 100.65792 | 0.00141 |
| 15. regulations and operating are clear, relevant to my job. | 92.86169 | 0.03518 |
| 16. unit willing change established methods improve quality | 126.28753 | 0.00040 |
| 17. unit above my unit is willing to change established | 119.78729 | 0.00200 |
| 18. My unit has clearly defined goals | 114.03377 | 0.00070 |
| 19. My unit has clearly defined objectives | 98.87075 | 0.01313 |
| 20. My unit's goal are achievable. | 123.65918 | 0.00080 |
| 21. I consider myself part of the "team" in my unit. | 82.78426 | 0.14085 |
| 22. other members of unit say I exercise initiatives | 69.73829 | 0.48635 |
| 24. My unit identifies duplication of effort. | 91.39261 | 0.04400 |
| 25. My unit takes action to eliminate duplication of effort. | 96.31259 | 0.02025 |
| 26. My unit's workload is fairly distributed. | 80.54958 | 0.18244 |
| 27. A spirit of cooperation and team work exists in my unit. | 121.71566 | 0.00013 |
| 28. I received the training I need to do my job. | 88.76738 | 0.06446 |
| 29. I have the resources I need to do my job | 93.54341 | 0.03164 |
| 30. I am afforded the time necessary to do my job well. | 66.37905 | 0.60058 |
| 31. I receive feedback . . . satisfied with my product/output. | 95.56614 | 0.02289 |
| 32. My supervisor's actions show he wants me succeed | 86.45165 | 0.08855 |
| 33. My supervisor shows confidence in my ability | 94.66023 | 0.02650 |
| 34. My supervisor encourages me to identify nonproductive | 76.34379 | 0.28206 |
| 35. I know what is expected concerning job performance. | 101.92984 | 0.00763 |
| 36. I know my job description. | 96.69923 | 0.01899 |
| 37. My actual duties match my job description. | 90.84700 | 0.04772 |
| 38. The tasks I perform are free of rework and waste. | 88.57455 | 0.06624 |
| 39. I receive feedback on how I am performing in my job | 81.90752 | 0.15625 |
| 40. performance measured against established standards | 95.00814 | 0.02506 |
| 41. The meetings I attend have a defined purpose. | 100.34860 | 0.01014 |
| 42. The meetings I attend achieve their purpose. | 89.35530 | 0.05930 |
| 43. I enjoy my job. | 75.52800 | 0.30451 |
| 44. I know my unit's mission. | 113.19070 | 0.00083 |
| 45. I know how my work contributes to my unit's mission | 77.03993 | 0.26367 |
| 46. The training I receive is well planned. | 93.69021 | 0.03092 |
| 47. The training I receive is effective | 102.85287 | 0.00644 |
| 48. I feel confident that I can execute my duties | 84.62603 | 0.11224 |
| 49. I am confident I have the training I need | 69.91175 | 0.48049 |
| 50. My unit has the training we need | 113.92459 | 0.00071 |
| 51. My unit has the resources we need | 104.07118 | 0.00514 |
| 52. My unit's performance measurements accurately | 90.77396 | 0.04824 |
| 53. I am prepared for a short-notice deployment | 97.97401 | 0.01532 |
| 54. My unit has effective communication channels. | 111.93558 | 0.00108 |
| 55. My supervisor asks me for my input | 87.67649 | 0.07504 |
| 56. My supervisor uses group meetings | 98.52540 | 0.01394 |
| 57. My supervisor provides instructions that enable me | 95.32921 | 0.02379 |
| 58. My supervisor tells me what is going on | 86.87431 | 0.08368 |

Table 5 conti.

| | Pearson Value | Significance |
|--|---------------|--------------|
| 59. comfortable saying what is on my mind | 88.56701 | 0.06631 |
| 60. I receive recognition for doing my job well. | 77.42867 | 0.25373 |
| 61. I receive respect for doing my job well. | 76.26568 | 0.28417 |
| 62. I receive recognition for working with others to | 87.93845 | 0.07238 |
| 63. I receive timely information about future unit events. | 81.47246 | 0.16433 |
| 64. I receive enough information about future unit events. | 76.91153 | 0.26701 |
| 65. My unit successfully collaborates/cooperates w/ other | 85.45818 | 0.10090 |
| 66. collaborates/cooperates with other organizations | 80.69867 | 0.17943 |
| 67. someone in my unit who will listen to career/job | 60.72618 | 0.77766 |
| 68. is someone in my unit who will listen to understand | 79.02695 | 0.21529 |
| 69. I have received training on Hooligan Initiative | 85.45083 | 0.10099 |
| 70. I understand the basic principles of Hooligan Initiative | 64.37112 | 0.66725 |
| 71. unit commander demonstrates support of Initiative | 82.80814 | 0.14045 |
| 72. supervisor's actions demonstrate support of Initiative | 76.55751 | 0.27634 |
| 73. I support the Hooligan Initiative | 68.62153 | 0.52424 |
| 74. Initiative gives opportunity to make real improvements | 76.58214 | 0.27568 |
| 75. supervisor keeps informed on progress of goals | 92.58422 | 0.03672 |
| 76. supervisor interested in improvement to meet goals | 131.83142 | 0.00001 |

An examination of the 1995 Air Combat Command Culture and Leadership

Survey (ACC-CLS) provided comparative information (Table 6) of the 119th FW survey results (local information) with the ACC-CLS results (national level). Table 6 preserves the numbers from the 119th FW survey, and a Chi-Square has been calculated and appears to the far right of the table.

Interviews

A series of interviews were conducted at the University of North Dakota (UND), Grand Forks, North Dakota, to gather background information about the development of a Total Quality Management program at the higher education level within North Dakota. The interviews were conducted with Kendall Baker, President of the University of North Dakota; Marlene Strathe, Vice President of Academic Affairs and Provost at UND, and Daniel Rice, Director of Instructional Development at UND.

Table 6: Survey Comparison

| Question ND Air National Guard: 119th Fighter Wing ACC Culture and Leadership Survey (if any) | Total | Disagree | Neut | Agree | χ^2 |
|--|--------------|--------------|-------------|--------------|----------|
| 13. I exercise initiative and suggest improvements w/i unit | 469 | 25 | 93 | 351 | |
| 14. My unit implements my ideas and/or suggestions. 1. My unit implements my ideas and/or suggestions. | 468 58643 | 96 12315 | 185 7624 | 187 33426 | 276.8376 |
| 15. regulations and operating are clear, relevant to my job. 15. regulations and operating are clear, relevant to my job. | 468 59109 | 69 10640 | 113 8866 | 286 34874 | 29.2108 |
| 16. unit willing change establish methods improve quality 2. unit willing change establish methods improve quality | 468 57630 | 67 13255 | 104 4610 | 297 34002 | 149.595 |
| 17. unit above my unit is willing to change established | 466 | 74 | 192 | 200 | |
| 18. My unit has clearly defined goals 3. My unit has clearly defined goals | 468 60108 | 82 10819 | 100 5410 | 286 39671 | 81.8548 |
| 19. My unit has clearly defined objectives | 467 | 108 | 143 | 216 | |
| 20. My unit's goal are achievable. 4. My unit's goal are achievable. | 466 57425 | 34 5743 | 127 7465 | 303 37901 | 87.3255 |
| 21. I consider myself part of the "team" in my unit. 14. I consider myself part of the "team" in my unit. | 468 60499 | 65 9075 | 83 5445 | 318 42954 | 40.9739 |
| 22. other members of unit say I exercise initiatives | 467 | 27 | 152 | 288 | |
| 23. Work activities are well planned in my area. 10. Work activities are well planned in my area. | 467 60080 | 90 16822 | 114 6008 | 263 33645 | 108.7465 |
| 24. My unit identifies duplication of effort. 8. My unit identifies duplication of effort. | 468 58127 | 92 23251 | 179 7557 | 197 21507 | 279.8533 |
| 25. My unit takes action to eliminate duplication of effort. | 468 | 99 | 172 | 197 | |
| 26. My unit's workload is fairly distributed. 9. My unit's workload is fairly distributed. | 468 60203 | 120 24683 | 107 6020 | 241 26489 | 109.9466 |
| 27. A spirit of coop and team work exists in my unit. 11. A spirit of coop and teamwork exists in my unit. | 467 61090 | 66 18327 | 94 5498 | 307 34210 | 110.8645 |

Table 6 conti.

| Question ND Air National Guard: 119th Fighter Wing ACC Culture and Leadership Survey (if any) | Total | Disagree | Neut | Agree | χ^2 |
|--|--------------|--------------|-------------|--------------|----------|
| 28. I received the training I need to do my job. 12. I received the training I need to do my job. | 467 60790 | 78 12158 | 77 4255 | 312 41337 | 61.2087 |
| 29. I have the resources I need to do my job 13. I have the resources I need to do my job | 467 61457 | 61 15364 | 77 3687 | 329 40562 | 113.9852 |
| 30. I am afforded the time necessary to do my job well. | 466 | 92 | 119 | 255 | |
| 31. I receive feedback satisfied with my product/output. 7. I receive feedback satisfied with my product/output. | 466 58554 | 92 11125 | 119 7027 | 255 35718 | 73.9371 |
| 32. My supervisor's actions show he wants me succeed 5. My supervisor's actions show he wants me succeed | 466 60556 | 34 7267 | 127 4845 | 305 45417 | 233.3205 |
| 33. My supervisor shows confidence in my ability 46. My supervisor shows confidence in my ability | 466 60054 | 51 4804 | 51 3003 | 364 49244 | 40.2345 |
| 34. My supervisor encourages me identify nonproductive 29. My supervisor encourages me identify nonproductive | 466 57736 | 83 10967 | 163 8083 | 220 33487 | 157.1601 |
| 35. I know what is expected concerning job performance. 17. I know what is expected concerning job performance. | 466 60278 | 52 4220 | 64 1808 | 350 51236 | 194.8542 |
| 36. I know my job description. 16. I know my job description. | 466 61826 | 38 3091 | 47 1855 | 381 55025 | 90.3533 |
| 37. My actual duties match my job description. 18. My actual duties match my job description. | 466 60957 | 95 12801 | 84 3657 | 287 42060 | 115.8958 |
| 38. The tasks I perform are free of rework and waste. 28. The tasks I perform are free of rework and waste. | 465 59785 | 75 20925 | 125 5979 | 265 29295 | 182.9603 |
| 39. I receive feedback on how I am performing in my job 20. I receive feedback on how I am performing in my job | 464 60329 | 110 12669 | 126 5430 | 228 39214 | 187.8423 |
| 40. performance measured against established standards 19. performance measured against established standards | 464 57425 | 131 11485 | 169 9188 | 164 31584 | 171.1401 |
| 41. The meetings I attend have a defined purpose. | 467 | 108 | 132 | 227 | |
| 42. The meetings I attend achieve their purpose. 22. The meetings I attend achieve their purpose. | 467 56607 | 31 15284 | 177 8897 | 187 26039 | 218.8385 |
| 43. I enjoy my job. 23. I enjoy my job. | 467 60100 | 38 10818 | 83 4808 | 346 40868 | |

Table 6 conti.

| Question ND Air National Guard: 119th Fighter Wing ACC Culture and Leadership Survey (if any) | Total | Disagree | Neut | Agree | χ^2 |
|--|--------------|--------------|--------------|--------------|----------|
| 44. I know my unit's mission. 24. I know my unit's mission. | 466 60290 | 79 4220 | 72 3617 | 362 48835 | 133.9413 |
| 45. I know how my work contributes to unit's mission 26. I know how my work contributes to unit's mission | 466 60380 | 21 3623 | 61 3623 | 384 50115 | 40.6533 |
| 46. The training I receive is well planned. | 466 | 82 | 157 | 227 | |
| 47. The training I receive is effective | 466 | 51 | 128 | 287 | |
| 48. I feel confident that I can execute my duties | 467 | 18 | 51 | 398 | |
| 49. I am confident I have the training I need | 467 | 39 | 85 | 343 | |
| 50. My unit has the training we need 25. My unit has the training we need | 467 59049 | 35 15353 | 102 4724 | 330 34839 | 179.9714 |
| 51. My unit has the resources we need | 467 | 55 | 99 | 313 | |
| 52. My unit's performance measurements accurately 27. My unit's performance measurements accurately | 465 51635 | 65 9811 | 142 10843 | 258 21171 | 49.2691 |
| 53. I am prepared for a short-notice deployment | 465 | 99 | 88 | 278 | |
| 54. My unit has effective communication channels. 30. My unit has effective communication channels. | 467 60191 | 129 21067 | 134 5417 | 214 30698 | 205.0359 |
| 55. My supervisor asks me for my input 31. My supervisor asks me for my input | 467 59359 | 104 10685 | 91 4155 | 273 40364 | 113.0692 |
| 56. My supervisor uses group meetings 32. My supervisor uses group meetings | 465 59157 | 91 1183 | 97 5916 | 277 37270 | 800.3900 |
| 58. My supervisor tells me what is going on 34. My supervisor tells me what is going on | 466 59547 | 104 16078 | 93 5955 | 269 33942 | 48.923 |
| 59. comfortable saying what is on my mind | 464 | 75 | 73 | 316 | |
| 60. I receive recognition for doing my job well. 35.* I receive recognition for doing my job well. | 464 59215 | 91 15988 | 142 5922 | 231 33160 | |

Table 6 conti.

| Question ND Air National Guard: 119th Fighter Wing ACC Culture and Leadership Survey (if any) | Total | Disagree | Neut | Agree | χ^2 |
|--|--------------|-------------|-------------|--------------|----------|
| 61. I receive respect for doing my job well. 35.* | 465 | 91 | 142 | 231 | |
| 62. I receive recognition for working with others to 36. I receive recognition for working with others to | 464 58338 | 85 15751 | 166 8751 | 213 29752 | 146.6986 |
| 63. I receive timely information about future unit events. | 464 | 93 | 104 | 267 | |
| 64. I receive enough information about future unit vents. | 465 | 96 | 120 | 249 | |
| 65. My unit successful collaborates/cooperates w/ other | 464 | 44 | 127 | 312 | |
| 66. collaborates/cooperates with other organizations | 464 | 44 | 127 | 312 | |
| 67. someone in my unit who will listen to career/job | 465 | 60 | 120 | 285 | |
| 68. is someone in my unit who will listen to understand 48. is someone in my unit who will listen to understand | 465 58368 | 59 11090 | 145 6420 | 261 36772 | 186.1028 |
| 69. I have received training on Hooligan Initiative | 464 | 127 | 93 | 254 | |
| 70. I understand basic principles of Hooligan Initiative 37. I understand basic principles of Hooligan Initiative | 464 57601 | 67 5760 | 89 5184 | 308 41473 | 63.2819 |
| 71. unit commander demonstrates support of Initiative 38. unit commander demonstrates support of Initiative | 465 55581 | 48 6114 | 130 7226 | 287 35016 | 70.2621 |
| 72. supervisor's actions demonstrate support of Initiative 39. supervisor's actions demonstrate support of Initiative | 464 56946 | 64 7403 | 148 7972 | 252 45876 | 145.5033 |
| 73. I support the Hooligan Initiative 40. I support the Hooligan Initiative | 463 55715 | 18 6129 | 96 7243 | 349 35100 | 53.2067 |
| 74. Initiative gives opportun to make real improvements 41. Initiative gives opportun to make real improvements | 464 55260 | 42 11052 | 190 9947 | 232 27077 | 161.8392 |
| 75. supervisor keeps informed on progress of goals 76. supervisor keeps informed on progress of goals | 462 57704 | 77 11541 | 157 7502 | 228 33468 | 165.2325 |
| 76. supervisor interested in improvement to meet goals 50. supervisor interested in improvement to meet goals | 454 54278 | 78 7056 | 133 9227 | 243 30396 | 47.3222 |

In April 1991 the then President of the University of North Dakota (UND), Thomas Clifford, released the following memo, along with the brochure, "Total Quality Management: A Guide for the North Dakota University System" (1991), to the University Community, for the reason of a "Guide to Total Quality Management":

I am pleased to provide you with your personal copy of a booklet from the State Board of Higher Education. The Board supports a set of management ideas for the North Dakota system that you will find familiar in some ways, new in others. These ideas to increase quality, increase productivity, and decrease cost, are exciting. The success of "Total Quality Management" is based on broad understanding and participation by all faculty and staff. You'll be hearing more about the TQM concept, and many of you will have training opportunities to learn about it in depth. For now, I hope you will take the time to read the booklet, discuss it with you colleagues, and begin using TQM principles as appropriate.

The brochure was issued as "central to the [North Dakota University] System's seven-year plan, 'Partners for Progress' . . . To help . . . every faculty and staff member to know more so that you can prepare for --and start using-- TQM, even before we can get the training to you. . . Lee D. Christensen, President, State Board of Higher Education" (TQM, 1991, p. 2). Some staff members attended "UND Total Quality Improvement

Planning Discussion” where they were introduced to the concept of TQM. This training included the following statement (UND TQI, 1992):

With the impending retirement of Tom Clifford, UND’s vice presidents are key players in our TQ efforts. Therefore, open discussion that includes both the Vice presidents and those involved in TQ implementation is essential. Do we all know where we are and where we are going relative to the TQ initiative? The UND Total Quality Advisory Group wants to help the VP’s fill their implementation role successfully, if implementation is, in fact, what the goal is determined to be.

The North Dakota University System defined quality: “The quality of service is defined by the customer’s “perception” of both the quality of the product and the service providing it (Total Quality Improvement, 1992, p. 1). After the initial training sessions with some of the members of the UND campus, attendees were asked to take the information back to their work groups and discuss where TQM would be implemented into their areas. After this suggestion was made it appears little or no action was taken to implement TQM into the University of North Dakota.

Baker Interview

According to Kendall Baker, President of the University of North Dakota (personal communication, October 1, 1996), “The Total Quality initiative is in existence in language only. There was lots of declaratives. . . and not much initiative. . . There were no real resources, only approximately \$50,000 in start up moneys.” “TQ was to be

implemented in 1990/1991 with administrators taking part in customer satisfaction workshops [which would then be brought to the staff within the administrator's offices].”

Shortly after the initial push for TQM was implemented, the president of the Board of Higher Education left that position, and along with the people behind the TQM initiative, and TQM was never implemented. According to Baker, TQM was not an issue when he was hired as president of UND in July 1992.

Strathe Interview

Marlene Strathe, Vice President of Academic Affairs and Provost at the University of North Dakota, said when asked in an interview if there had been any talk of implementing TQM for Academic Affairs, “None. . . [TQM] works best where outcomes are explicit. . . TQM has not been carried forward [in the 7 year program]” (personal communication, October 2, 1996).

Rice Interview

A third interview was conducted with Daniel Rice, Director of Instructional Development at UND and a member of the representative group from UND to the North Dakota Board of Higher Education to implement TQM principles within the state. Rice indicated that the two driving forces behind total quality in the North Dakota Higher Education System were Ellen Chaffe, the Assistant Commissioner of Academic Affairs for the ND Board of Higher Education, and Douglas Treadway, then Commissioner of Academic Affairs for the ND Board of Higher Education (personal communication, October 8, 1996). Treadway was also the person who spoke nationally in 1990/1991 of North Dakota “leading the way in total quality.” According to Rice, quality training was

given to the clerical staff in academic admissions at UND, but a total commitment was needed to train the remainder of the campus. This training did not occur, since Treadway and Chafee both left the Commissioners Office. Further, there was little support from the other colleges and universities within the North Dakota system and little time to implement a quality program with UND's President Clifford retiring. Today, said Rice, faculty have some quality measures in place which are not directly identified as TQM practices in the form of faculty communications between parallel curricula amongst colleges and the curriculum committee. According to Rice, there are no quality efforts amongst divisions such as Academic Affairs and Student Academic Affairs.

CHAPTER V

FINDINGS AND DISCUSSION

Total Quality Management (TQM), a technique traditionally associated with business and manufacturing, has spread from the business community to governmental agencies to educational institutions. Along with the movement from business to other agencies and groups initial anticipation and expectation has spread, often leading to confusion, frustration, and disappointment. The confusion, frustration, and disappointment is most often associated with programs that start with management proclaiming its support, followed quickly by mandates for implementation, and followed some time after with little or no success. It is suggested that part of the problem of TQM's lack of implementation is due to under-funding, part is due to management's mishandling of the situation, part is due to worker sabotage, part is due to middle management not embracing the ideas of TQM, and part is a result of no one understanding what TQM is in the first place. No matter where institutions may want to place the blame, TQM practices have been implemented in many areas, most notably at the federal government level. The acceptance of TQM practices at the federal level has an effect most directly on agencies within the United States government--in particular, in the United States National Guard and Department of Defense. TQM is also prevalent in corporate America, which lends its practices to the business of higher education. These two entities, the National Guard and higher education, which seem on the surface to have

no basis for comparison, do, in fact, have common structures; These common structures are funding and administrative structures and as comparative missions. For these reasons, it is plausible to look at how the National Guard is dealing with its Total Quality Management issues in comparison to higher education.

To answer the question of how the National Guard is handling its TQM practices a secondary analysis was conducted of a Total Quality Initiative survey conducted by the 119th Fighter Wing of the North Dakota Air National Guard. The secondary analysis addresses responses to the question of how the 119th FW compares to Deming's (1986) "14 Points of Management" which is the basis for the federal government's TQM practices. A second research question was asked to establish a comparison among units within the 119th FW. A Chi-Square analysis was carried out to establish if any unit's responses to the survey were significantly different from the other units. Differences in response rates were seen in six (two from the sub-scale "Work Place Environment," one from the sub-scale "Job Satisfaction," one from the sub-scale "Communication," and two from the sub-scale "Quality Initiative") of 64 questions where $p \leq 0.001$. A third comparison was drawn between the active duty forces represented in the Air Combat Command (ACC) national quality survey and the 119th FW to establish the generalizability of the responses to other armed forces units. Differences were found through a Chi-Square analysis revealing that each of the questions had a significantly different response at the $p \leq 0.001$, due partially to the large sample size involved.

The fourth research question looked for similarities between the 119th FW and business implemented TQM by a comparison of management structure. It was

determined that the 119th FW's management structure is comparable to the business implemented TQM. Further, at the time of the survey, the 119th FW was practicing the "Theory Y" style of management, which resulted in part due to directives from the United States Air Force and the Department of Defense. This was followed by the last research question comparing the 119th FW to institutions of higher education in the practice of TQM, with specific attention drawn to the University of North Dakota. It was found that a similarity in management structure and mission, as well as state and federal directives, do allow comparisons to be made between higher education and the National Guard. These comparisons can be draw in an effort to facilitate the implementation of TQM programs when required for federal grants and contracts.

Research Questions

Research Question 1: Did the Quality Air Force Initiative survey provide an assessment of Total Quality Management within the 119th Fighter Wing?

The initiation of the 119th Fighter Wing's Quality Air Force Survey under its Quality Force Initiative (QFI) demonstrated a desire by the command structure of the Wing to determine if their efforts towards TQM had succeeded. To this end, the 119th FW requested all members to respond to the questionnaire and provided its members with the opportunity to express their views. It can be argued that a determination of their success would be to compare their questionnaire to Deming's "14 Points of Management" to evaluate if the QFI survey provided an assessment of Total Quality Management within the 119th Fighter Wing (Research question 1). Deming's points of

management would suggest asking if the members of the 119th FW construed there to be a constancy of purpose toward improvement and if the unit had adopted the new philosophy of Total Quality Management. These questions were addressed in Section 5: 119 FG Quality Initiative, questions 69 through 76. The TQI survey also asked respondents about rework and waste management in their jobs (Section 2: Job satisfaction, question 38).

Deming's points of management would expect the ceasing of dependence on the process of inspection to achieve quality. The TQI survey did not directly ask if this practice has been upheld, since federal governmental guidelines for operation of aircraft and other modes of transport require the process of inspection as do the command practices of the armed services. However, Survey Section 1: Work Place Environment does ask about training, resources, workload, and managerial feedback to the workers is in the spirit of Deming's question. Deming also expects an end to the practice of awarding business on the basis of price tag. This would result in the process of improving constantly and forever the system of production and service. This improves quality and productivity, thus constantly decreasing cost. The 119th FW is restricted in its practices, also, as the contract and the "managers" or command members of the unit do not directly write procurement policies. The federal government itself, however, does write contract and procurement policies and is the body which mandated TQM practices within the United States armed services. It is the federal government that needs to recognize that its current practice of awarding contracts to the lowest bidder is not necessarily the most quality oriented. However, such a change would need to meet a cost

and benefits test. If the United States government is going to continue its managerial practice of implementing TQM, it presumably would allow state run military services such as the Air National Guard to initiate the practices it subscribes to. It could be argued, however, that the management envisioned by TQM is at the national level, and other managers are middle management. This is an important conceptualization of the management structure of the 119th Fighter Wing as the TQM initiative is said to be directed from the top management which is supposed to be the guiding force in implementing TQM practices. If the command staff of the 119th FW are not the top level of management, they would then be the "middle manager," who must be the go-between in this process, communicating initiatives made at the national level in Washington, D. C., to the workers at the local level. This shift in perception of the management structure categorizing all members of the Wing as workers, officers and enlisted personnel, rather than the current conceptualization that the officers are the upper management. This takes decision-making control away from the officers at the 119th FW and places it with the National Guard Bureau, the United States Air Force, and the Department of Defense. The 119th FW can then make suggestions for improvements and changes at the local level. If the National Guard Bureau and the United States Air Force commanders allow for the independent workings of their "middle management" in some areas, the 119th FW commanders can make some changes; however, ultimate control of the "company," the Wing, lies at the federal level. This perception would seem to provide the best explanation of the current situation with the 119th Fighter Wing, in fact, with all National Guard units; they are bound by the decisions made at the federal

level, even while they are classified as state institutions. Section 1 (question 28 through 30) and Section 3—Mission (questions 46 through 50) indicate the 119th's use of on-the-job training. Also as part of the benefits of being a member of the ND National Guard, though not questioned in the TQI survey, members presently are strongly encouraged to continue their education through a 100 percent tuition reimbursement program at the North Dakota's institutions of higher education. Education and self-improvement programs are seen as absolutely necessary in Deming's view of TQM.

Section 4: Communication, continues with Deming's managerial initiative of instituting leadership with supervisors seeking input from workers (question 55 through 56) and providing instructions that enable a task to be performed (question 57). Some questions are also asked as to the implementation of collaboration and cooperation within the 119th (questions 65 through 66), as well as workers' perceptions of teamwork (questions 58, 62, 67 through 68). The 119th TQI survey could be faulted as falling short of achieving its goal of surveying attitudes and questions as to the success in its Total Quality Initiative, in that there is a total lack of questioning about fear within the organization. None of the questions ask or circumvent the question of how do the workers feel towards their supervisor directly. There are broad-based questions such as, "Is there someone in my unit who will listen to understand my concerns about my job/career?" but no questions for individuals to rate their supervisor. This is followed by two questions about collaboration and cooperation, which do not ask specific questions to find out where there may be on collaboration or cooperation.

There are also no questions addressing how the members of the unit feel towards the use of slogans and targets for the work. It has been said (personal communication) that the unit is doing more work with fewer resources, as the armed services are receiving reductions in funding and staffing. In striking contrast to the mandate of the use of TQM, the unit, nevertheless, continues the practice of creating targets and goals as a “motivational” tool of management – in clear violation of TQM theory. It is this researchers sense, after visiting the Air Base during the past year, that the use of slogans and targets has a negative effect on the workforce’s attitudes towards their work and towards the command structure of the unit. An example of this negative effect is the William Tell Competition. The William Tell competition is held every two years to allow air units to compete against one another in air and tactical maneuvers with the goal of providing air units with advanced training and war game scenarios to test their skills. The 119th FW was expected to maintain their first place ranking, and it could be interpreted that, below the management level, there was little enthusiasm for this expectation. Members of the Wing made closed-door statements that it was a situation that pushed the workers into overtime and stressful work conditions, with a perceived diminished return. All members of the unit heard command/management’s goal of attaining first place ranking again through meetings and briefings and were greeted each morning with a countdown board at the main entrance gate as a reminder. Comments were made, again behind closed doors, that only a few members of the wing would benefit from the work of many. The use of TQM would call for elimination of work standards (quotas) and eliminating management by numbers and numerical goals.

Deming proposed that this practice needs to be replaced by strong leadership. Goals and quotas such as those described above do not encourage quality. A pride of workmanship needs to be established which produces a quality product. If a quality product is produced, it can unto itself win competitions. Further, if several units perceived achieving first place as an indication of merit, the process would become self-defeating.

Deming's vision of TQM requires everybody in the company to work to accomplish the goals of TQM. It requires that every member of the 119th FW understand the practices of TQM and every member to be part of its implementation of quality. When this survey was conducted fewer than half of the members of the 119th FW had completed TQM training; in April 1996, this number had increased to only 80 percent. With many members of the unit unfamiliar with the implementation of TQM practices and with continuation of many managerial/command practices that do not mesh with TQM practices, it is understandable why some members of the 119th do not share the same unit/company vision. Further, those who have a higher familiarity might conclude that present management practice is inconsistent with TQM.

Research Question 2: How do the units within the 119th Fighter Wing compare to other units within the group?

A Chi-Square analysis was performed to determine if there were significant differences between responses from unit to unit within the 119th Fighter Wing. The results can be seen in Table 5. Evidence of differences was interpreted to be found in all four areas of the survey. For "Work Place Environment," questions 13 to 34, at $p \leq 0.001$ there are two of 21 questions indicated a difference in responses between units. The

questions which indicated an interpretation of a roughly different response rate were: “Other members of my unit say I exercise initiative” with a Chi-Square value of 0.48635 and “I am afforded the time necessary to do my job well” with a Chi-Square value of 0.60058. The first question indicated above (“Other members of my unit would say I exercise initiative for improvements) 13 percent strongly agreed, 49 percent agreed, 33 percent neutral, 5 percent disagreed, 1 percent strongly disagree. Categories for the ACC survey and the 119th FW results for comparison, resulting were combined in 65 percent of the members strongly agree or agree with this statement, 33 percent were neutral, and 6 percent disagreed or strongly disagreed. The units that expressed a difference in response to this question were Logistics, Logistics Support Group, Medical, Services, and Maintenance Squadron. This question required respondents to place a value judgment upon how others perceived their work, which invites skepticism as to the accuracy of this item. However, it can be interpreted that members of the units who have a different response than their colleagues to this question believe that other members of the Fighter Wing do not understand their jobs. This lack of understanding results in a belief that members of the 119th FW who are outside of a particular unit cannot place a value judgment upon work they do not understand. Hence the variation in responses among the units.

As for the second question indicated above (“I am afforded the time necessary to do my job well”) 16 percent strongly agreed, 52 percent agreed, 18 percent neutral, 9 percent disagree, 5 percent strongly disagreed. As the ACC survey combined their categories, the categories of the 119th FW survey will be combined: 68 percent strongly

agreed or agreed, 18 percent were neutral, and 14 percent disagreed or strongly disagree.

The units that expressed the greatest difference in response to this question were

Logistics, Logistics Support Group, Services, Civil Engineering, and Maintenance

Squadron with noticeable differences between expected versus observed responses.

Workers' perception of having enough time to complete the tasks assigned can effect

quality. It is assumed that workers who feel that they are rushed in their work will allow

quality to lag in order to get the job completed on time. An assessment of work loads

seems to be in order at the 119th FW, since 32 percent of the respondents gave an answer

of neutral, disagree, or strongly disagree to the question of having enough time to do their

jobs well. This is particularly important for management to recognize as the respondents

felt that they were not completing all of their work to a quality level. If the management

of the 119th FW disregards this perception, they are not following through on one of

Deming's "14 Points of Management," which requires managers to listen to their workers

where issues of quality are concerned.

The responses for "Job Satisfaction," questions 35 to 53, were $p \leq 0.001$ indicated

one of 19 questions had a difference in responses. The response rate for this question ("I

am confident I have the training I need to accomplish the mission") had a

Chi-square value of 0.48049. The responses were 20 percent strongly agreed, 54 percent

agreed, 19 percent neutral, 6 percent disagree, and 2 percent strongly disagreed. The

categories were again collapsed to 64 percent strongly agreed or agreed, 18 percent were

neutral, and 8 percent disagreed or strongly disagreed. Noticeable differences between

expected versus observed responses were seen in responses for Logistics, Medical,

Operations, Mission Flight Support, Communications, Services, Civil Engineering, and Maintenance Squadron, which represent eight of the fourteen units. Training is necessary for employees to understand their jobs. Employees who have the training they need, according to the principles of TQM, can produce a quality product, since they are educated in how to deal with quality issues. It would be to the benefit of the 119th FW to determine the training level of all of its members, particularly since 27 percent of their members responded as neutral, disagree or strongly disagree when asked if they have the training required for their work mission. This information is also important since a failure in any one of the groups listed above could have fatal consequences.

The responses for the questions contained in the sections labeled "Communication," questions 54 through 68, were $p \leq 0.001$ resulted in one of 15 questions indicating a difference in responses. The response rate for this question (There is someone in my unit who will listen to understand my concerns about my job/career) were 15 percent strongly agreed, 46 percent agreed, 26 percent neutral, 9 percent disagreed, 4 percent strongly disagreed. The Chi-Square value of 0.77766 was calculated with the collapsed response rates were 61 percent strongly agreed or agreed, 26 percent were neutral, and 13 percent disagreed or strongly disagreed. The unit which expressed a noticeable difference between expected responses and observed responses were Support, Logistics, Logistics Support Group, Medical, Detachment One, Operations, Services, Security Police, Civil Engineering, and Maintenance Squadron, representing ten of the fourteen units within the 119th Fighter Wing. Due to the differences associated with this question it is ventured that there is a perception within the units that career questions and

job security are not discussed openly. Job security and career advancement questions are security issues which, according to Deming, must be clarified if the workers are going to focus on their jobs. Employees worried that they will not have a future with the company are not likely, says Deming, to produce a quality product.

The analysis for questions concerning the area of "Quality Initiative," questions 69 through 76, were $p \leq 0.001$ resulted in two of eight questions indicating a difference in responses. These questions were, "I understand the basic principles of the Hooligan Initiative" with a Chi-Square value of 0.66725, and "I support the Hooligan Initiative" with a Chi-Square value of 0.52424. The differences between units for the questions concerning the quality initiative at the 119th FW can be interpreted to exist due to the percentage of people who had not completed quality training when the survey was initiated. It can be theorized that the response differences in the question of understanding the basic principles of the Hooligan Initiative would be found to have decreased had the survey been completed after April 1996 when greater than 80 percent of the 119th personal had completed quality training. As for the response difference between units who support the Hooligan Initiative, it is of value to know that 77 percent of the members of the FW agreed or strongly agreed with the principle of the Initiative, 19 percent were neutral, and 14 percent disagreed or strong disagreed. The original uncollapsed values were 15 percent strongly agreed, 52 percent agreed, 19 percent were neutral, 9 percent disagreed, 5 percent strongly disagreed. Supposition indicates that if it were possible to delineate which respondents had quality training it would be found that a large percentage of them support the Hooligan Initiative.

Research Question 3: How does the 119th Fighter Wing compare to the active duty forces?

Forty-three of the 64 questions on the 119th Fighter Wing QFI survey were taken from the Air Combat Command (ACC) national quality survey whose respondents are active duty military members. These 43 questions were compared using a Chi-Square analysis, revealing that 28 of the questions had a significantly different response at $p \leq 0.05$ (Table 6). Conversely, nine of 16 questions in “Work Place Environment,” four of 12 questions in “Job Satisfaction,” one of eight questions in “Communication,” and three of seven questions for “Quality Initiative” had no significant differences between active duty and National Guard. These differences suggest that there is a variation in the implementation of the quality process as National Guard members and active duty personnel, according to the Quality Office at the 119th FW, are exposed to the same method of quality instruction.

In general, differences in “Work Place Environment” can be explained through an understanding of how the schedule of the National Guard operates. A traditional Guard member is in his/her assigned workplace environment for one weekend a month and possibly for 15 calendar days a year. Work activities are being interrupted on a regular basis and it difficult to plan work effectively, prevent duplication in work, develop teams, and have supervisor’s provide individual attention. However, since the 119th FW’s goal is to promote the quality initiative, this is an area they need to develop to see a shift in responses from “neutral” about advancements in the quality initiative to “agree.”

In the area of "Job Satisfaction" it is necessary to loosely examine at the survey questions to aid in developing a hypothesis as to why there are differences. The majority of the questions that resulted in a variation in response dealt with questions asking about training and management feedback. The 119th FW appears to have more respondents indicating that they are more "neutral" than "agree[ing]," that they know what is expected of them, that their duties match their job description, that their job performance is measured accurately, and that they receive the training they need. Again, this might be attributed to the transient nature of the work Guard members perform. Guard members are also asked to do more than their primary job description requires. It would be of benefit, however, for the commanders of the unit to take a more serious look at these responses. Workers who do not have the training they need and/or do not feel comfortable with what is expected of them will usually not be able to focus on their jobs. This results in poor quality and necessitates rework. Since the goal of TQM is to eliminate rework and bring up quality, it becomes necessary to look at job satisfaction and the work environment.

In the area of "Communication," only one question out of eight seemed to have no variation from National Guard to active duty. This variation can also be attributed to the temporary nature of the Guard. More respondents within the National Guard, in general, indicated that they did not receive information they needed in relation to their job. Since Guard members report into their unit once a month, and in some cases at a different time from when the majority of people come to work (primary UTA versus alternate UTA), it is not surprising that there is a perceived problem in informational flow. Communication

is the foundation for any company to have an effective work force, particularly if that work force has various stop and start times and/or is not located in the same work environment. It would be to the advantage of 119th FW to be diligent in its dissemination of information.

College and universities (based on their scheduling) have faculty and staff who have various stop and start times and, in many cases, are also at different buildings, campuses, or other work places. Dissemination of information is always a challenge since someone invariably cannot attend a scheduled meeting. However, as with the National Guard, information is a vital part to effective work, and failure to get information to those who need it can have damaging consequences. Higher education and the armed services can learn from each other about ways to get information to those who need it. A prime example is the Internet, which was developed by the United States Army and is now used today by colleges and universities around the world.

Four of seven of the questions under "Quality Initiative" had significantly different responses between the National Guard and active duty members. The first difference is again attributed to the less than 60 percent of the 119th FW respondents having quality training when asked to complete this survey. For the question in this section for the 119th FW (I understand the principles of the Hooligan Initiative) the difference in response seem to be a result of more respondents answering "Neutral" which would probably shift to "Agree" if they had completed TQM training. The remaining questions in this section deal with supervisor's actions toward implementing quality issues. Again for the responses from the FW, the remaining questions display more

“neutral” responses. It is possible that not all supervisors received their quality training at the time of the survey and a second survey would probably show a shift to “agree.”

Research Question 4: How does the management structure of the 119th Wing compare to business implemented Total Quality Management standards?

The 119th Fighter Wing implements a TQM program as mandated by the Department of Defense which implies that there are comparable elements from corporate business practices to the United States military in their use of TQM practices. If comparisons are to be made under Deming’s vision of TQM, it would be necessary to compare the management structure of the 119th Fighter Wing to businesses implementing Total Quality Management as TQM must, according to Deming, be embraced and supported by management. The 119th FW does have a comparable command structure to those of a corporate business. The heads of the United States Armed Services act as the “Board of Directors.” Three Generals (P. D. Knox, K. D. Bjerke, A. J. Henderson) working as the business equivalent of a Corporate Executive Officer (CEO). Colonel (M. J. Haugen) work as the “president.” Three Lieutenant Colonels (H.B. Longino, L. M. Anvik, M. E. Borud) work together as the entity of a corporate “vice president.” And 22 various middle level officers working as “middle managers.” The “CEO”, “president”, and “vice president” of the 119th FW are said to be committed to the practice of TQM. They and their “middle managers” believe that there is a “base-wide commitment to the quality culture” (Appendix B, 119thFG NDANG, p. 3). The Total Quality Initiative, as with most business implemented TQM programs, was initiated at the top and promoted as the standard by which the “company,” the 119th Fighter Wing, would carry throughout.

This process of implementation is similar to the process by which many businesses come to the implementation of TQM.

The 119th Fighter Wing, as with the earlier attempts to implement quality initiatives in United States business, first moved to implement quality standards by starting Quality Teams and Quality Circles. These teams and circles are similar to the models of Quality of Worklife, Employee Involvement, Gain sharing, and Labor-Management programs which purported to tap into the potential abilities, skills, and knowledge of the American worker to produce gains in quality and productivity change (Total Quality Management History, 1995). The 119th FW holds up its various safety and flying awards as proof that their, "Management of Process Quality. . . [is] in place to ensure all tasks are accomplished" and that their quality initiative is working (Appendix B, p. 3). The process of changes through quality teams and circles did not last in United States businesses because the models were viewed as lacking the necessary component of system wide change. Changes in these groups were isolated and did not reach into the areas beyond production. The process of "quality improvement" itself, as defined by Deming, probably was not the source of the 119th Fighter Wing's success since they did not follow many of Deming's fourteen points of quality. It would seem to be the 119th FW's "continuous process improvements. . . resources. . . and ingenuity of [its] people to define solutions and produce results" (Appendix B, p. 3) that resulted in the unit's success in its competitive arenas.

The 119th FW is currently in the practice of "Theory Y" management. Specific on-the-job decisions at the operating levels delegate leadership authority to middle

management (the lower ranking officers of the Wing) but only on a limited basis, which places responsibility for quality control on the production worker/enlisted personnel. Lack of quality is blamed on the worker rather than on the production process itself. Input by workers (enlisted personnel) tends to fail and they continue to fight for rights and entitlements as recently seen by the renewed interest to bring a union into some of the technician positions (full time positions) at the Air National Guard. If the 119th FW wishes to implement Deming's practice of TQM throughout its organization to affect all personnel, the Fighter Wing's emphasis must be moved away from pursuing awards, to achieving awards as a result of increased quality, service, and customer satisfaction. The workers/enlisted personnel must know that their input and opinions are valued and that the process of improving quality is system wide, regardless of rank, and a committed part of the 119th's management practice in the future. The 119th cannot hold up its awards as proof of successful implementation of TQM, since the awards do not look within the whole organization; it must continue with consistent quality management practices. The 119th FW seems to be basing its quality planning in a reactive mode "driven by tasking, events, and exercises" (Appendix B, p. 2). This perception of quality implementation follows the ideas set out in Juran's use of TQM, however, the implementation does not appear to be system wide.

The previous comparison assumes that the quality initiative is directed by the local entity known as the 119th Fighter Wing rather than by the federal entity known at the United States Air Force, or greater still, to the United States Department of Defense. When comparisons are drawn from the federal level, the management structure changes.

Anyone below the rank of General becomes middle management and ,it could be argued, anyone not directly working at the federal level becomes middle management, including the 119th's three Generals previously perceived as the combined "CEO" of the unit. This perception of management structure does not allow the command staff of the 119th FW to author management policy in the practice of quality initiatives. Under these conditions, the actual practice of Total Quality Management comes into question, since the federal command level staff is stationed in Washington, DC and other parts of the United States, not allowing the federal level management to be aware of the day-to-day practices of the 119th FW. Deming's system of TQM calls for management to be in constant contact with the workers and if that cannot be accomplished, then they would be in constant contact with the middle management. Contact would require exchange of ideas from worker to middle management to management and back again. Under the current military system, communication does move within the 119th FW, but only a limited amount of information and communication occurs between the local "middle manager" to the federal management. For TQM to be successful (according to Deming, Crosby and Juran) information must freely flow between the local and federal entities.

Research Question 5: How does the management structure of the 119th Fighter Wing compare to institutions of higher education?

As previously stated above, the hierarchy and structure of institutions of higher education and the 119th FW can be viewed as being similar. At universities there are vice presidents and deans who report directly to the president. For the 119th Fighter Wing there are 14 units that report to the Air Force Advisor, the Vice Commander, and

the Chief of Staff (Organizational Chart of the 119th FW, Appendix C). These three military officers report to the local head or Commander of the 119th Fighter Wing (the equivalent to a university president). The Commander of the 119th FW reports to the Assistant Adjutant General, the Adjutant General, and the Chief of Staff (which would be comparable to reporting to a board of governors or state board of higher education). In the case of the University of North Dakota, the North Dakota Board of Higher Education reports to the Legislator and Governor of the state of North Dakota, Edward T. Schafer. Further, the three Generals of the 119th FW report to their Commander in Chief who also is the Governor of North Dakota during peacetime operations. The State of North Dakota must uphold federal guidelines to receive federal moneys for education; the 119th FW reports to a federal agency that regulates national security and wartime operations through the National Guard Bureau and the United States Air Force.

Similarities between the 119th FW and institutions of higher education can also be carried further by asking if the president and board of higher education have also conceived of themselves as “upper management” rather than “middle managers.” It was argued previously that the 119th FW may need to conceive of itself not as an autonomous organization which happens to report to a federal agency, but rather as the middle manager which has been charged with the process of carrying out the upper management’s conceptualization of TQM measures. This shift in perceived management structure looks towards the federal hierarchy to produce a company vision, and places the ranking commanders of the 119th FW as go-betweens from the workers to the management. A similar argument can be made for higher education.

One of the purposes for a state having an institution of higher education is to provide educated graduates to the state to perform professional trades. The people of the state, given voice by their legislators as in the case of North Dakota, can have a profound influence on what is taught at the college and university level through the mission of the college or university. For example, in North Dakota the state's university must maintain programs in liberal arts, business, law, medicine, engineering and mines, nursing, fine arts, aerospace, energy, human resources, and international studies as they are legislatively mandated. The people of North Dakota, through their legislators and the North Dakota Board of Higher Education, may choose to change the mission of the university, thereby changing the curriculum of the University of North Dakota. Through this argument it can be said that the deans of UND and the president are "middle managers," because they act upon the policies mandated by the legislators and the North Dakota Board of Higher Education. This system effectively eliminates the deans and the president as part of the "management team" who would decide how and what quality issues should be acted upon. The seemingly diametrically opposed military unit and institute of higher learning suddenly have many things in common as managerial power is shifted.

The similarity in management structure between the 119th Fighter Wing and a university suggests an argument that there are comparisons which can be made between the two institutions in their practice of Total Quality Management. The Fighter Wing has proceeded in the governmental directive to initiate TQM. At the governmental or federal level TQM practices will not be going away any time soon. Federal agencies, of which

the National Guard is one, will inevitably bring the practice of TQM out of Deming's realm of theory, change it from the Japanese practices of implementation and the current American business practices, and proceed to make it a unique form of American quality practice.

Some businesses and colleges and universities have resisted TQM practices with the hope that the seeming fad of TQM would disappear. While TQM has disappeared from the management style of many businesses, it is seeing resurgence as it is now necessary for any business that wishes to obtain federal contracts to implement International Organization for Standardization ISO 9000 practices. ISO 9000 management practices are based on the concept of TQM (Karon, 1996). If institutions of higher education wish to continue to receive funding from the government it is not inconceivable that federal guidelines similar to ISO 9000 may be required, particularly at the accounting and management levels, for those receiving federal grants. Under the expanding effects of Total Quality Management guidelines it is reasonable to suspect that organizations can learn from the information provided from the 119th FW's survey.

Implications

National Implications

It is reasonable to conclude that there are local organizations that follow federal guidelines without recognizing the influence of federal control over their organization. They perceive themselves as having greater control over the management decisions of their organization at the local level than they actually have. This shift of management, therefore, is not seen effecting TQM practices. This lack of foresight and/or

their organization at the local level then they actually have. This shift of management, therefore, is not seen effecting TQM practices. This lack of foresight and/or acknowledgment of this management shift is occurring within the 119th Fighter Wing and within its conceptual partner higher education. Management at either organization, therefore, can not adjust their quality goals to meet the needs of its customers as they do have the whole company embodied within their management structure. This results in ineffective communication of the need for change to the organization's workers. This lack of comprehension of the complete system of management implies that any TQM effort is doomed to fail, as an understanding of how management defines quality, and communication of that definition by management to the workers and middle management, is necessary for a success TQM program. Organization controlled by federal guidelines, in this case higher education and the National Guard, must understand how their management structure is organized if they are going to implement TQM or ISO 9000 programs to receive federal funding.

Implications for the 119th Fighter Wing

Beyond understanding the shift of upper management, this study also provides the 119th FW with further tasks if it is to continue its implementations of a TQM program. The local management of the 119th FW needs to follow through with efforts to increase the communication of information within its units as the workers, the enlisted personnel and lower ranking officers, indicated that they needed more information to complete their jobs at a quality level. This must be augmented with job training and assessment of time necessary to complete tasks, as workers have indicated a need for completed

training and recognition of tasking time. Failure to follow through on these needs, it is reasonable to surmise, will result in a degradation in quality as workers are pushed to finish jobs they are untrained to handle and/or do not have the time to complete. This will manifest itself in future evaluations which will most likely indicate an unsuccessful TQM program, or may possibly result in a loss of life due to the inherent risk factors associated with a military unit and an aviation unit. Lack of success in implementation of a successful TQM program on the part of the 119th FW may also result in a loss of future missions to the North Dakota Air National Guard. The current mission that is anticipated to be given to the ND Air National Guard is the Ballistic Missile Defense System (BMDS) that would expand the ND Air National Guard by approximately 400 members. Finally, all members of the 119th FW need to complete quality training, as an informed work force is needed for the feedback necessary for a successful TQM program.

Conclusion

The 119th Fighter Wing of the North Dakota Air National Guard implemented a survey to identify if their Quality Air Force Initiative of implementing Total Quality Management practices had succeeded. Analysis of the survey initiated by the 119th Fighter Wing presents a military unit which is attempting to follow its federal mandate of TQM through practices associated with Juran and based on Deming, the originator of the TQM concept. The command structure or management structure of the 119th FW is practicing a reactive form of management known as "Theory Y" which looks at quality issues as they arise on a problem-by-problem basis. In general, the personnel of the

119th FW support the management's decisions, however, there are some areas that need to be investigated (as indicated under Research Question 2). These areas are important to review the National Guard will continue to implement the concepts of Total Quality Management through its Quality Air Force Initiative program.

Meanwhile, colleges and universities may have chosen, directly or by default as in the case of University of North Dakota, to not continue with their TQM practices. There are many who are opposed to, and argue against, TQM practices within the classroom environment, and there are those of us who believe in the ideas behind TQM but do not agree on the methods. However, it can be maintained that there are many current practices which fit into the scheme of TQM at all, levels of the university system which makes a case that quality measures do exist but they are simply labeled differently. The business side of colleges and universities are continually looking for better ways to manage the burgeoning business that is higher education, and they may chose to continue to model after successful industries which do implement TQM practices. Looking towards these business and federal practices may provide higher education with proven procedures and which may allow higher education to avoid the recognized problems.

Recommendations for further research

To further the study of quality initiatives in business and academia, the following recommendations are presented for consideration.

1. It would be of value to initiate a second survey at the 119th FW to determine how attitudes may have changed as more than 90 percent of its members have

now completed training. At the time this survey was initiated, less than 60 percent of the 119th FW's members had completed TQM training.

2. Initiation of a survey at institutions of higher education which are currently practicing TQM with comparable questions to those of the 119th FW's survey would be valuable for direct comparative study between higher education practice of TQM and that of governmental initiated TQM practices.

3. A study of the companies currently implementing ISO 9000 business practices should be implemented to determine if these companies had a prior TQM program, if the prior TQM program has helped them implement ISO 9000 practices, and to identify if the ISO 9000 practices are being received with the same attitudes as those TQM received when it was implemented.

Deming would approve of looking towards the business practice of TQM for higher education to learn from businesses past successes of implementing quality practices. Deming himself probably did not envision the "14 Points of Management" being used in their current form for quality practices in higher education; however, he probably would see a benefit in their use. If institutions of higher education are going to move ahead in their quest for continually providing the most advanced forms of education in our nation, then they need to look at all possible practices that may help them succeed in their process. Total Quality Management may not be the panacea, but it may provide higher education with a few good ideas.

APPENDIX A

THE SURVEY



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS NORTH DAKOTA AIR NATIONAL GUARD
FARGO, NORTH DAKOTA

OSM - 388-0110
TEL (701) 237-4000
FAX (701) 241-7110

September 19, 1996

Institutional Review Board
c/o Office of Research and Program Development
University of North Dakota
P.O. Box 7134
Grand Forks, ND 58202

Greetings:

This letter acknowledges participation of the 119 Fighter Wing and the North Dakota Air National Guard with Mrs. Deanne Watrous Otto, a Doctoral candidate in Teaching and Learning/Research Methodologies. Her thesis is titled "Total Quality Management Survey: Quality Air Force Initiative as Related to the Practices of TQM."

Mrs. Otto has data collected from an organizational and unit culture survey executed at the Air National Guard in 1995. She has our permission to use the data we have collected, and to include in her thesis. We have discussed how that information might be used, and we remain in contact with her as she continues her research.

I look forward to the successful completion of Mrs. Otto's project. If you have any other questions or additional concerns, please feel free to contact me at my office, College of Engineering and Architecture, North Dakota State University, 701.231.7283.

Sincerely,

Allen J. Henderson, Brig. Gen., NDANG
Chief of Staff

Happy Hooligans

Important Note

The 119 FG/PQ (Quality) office has made every effort to insure your response to the survey is anonymous. Accurate demographic information is important in all survey work so that improvement efforts can be targeted most effectively. We also acknowledge that even in an eleven-hundred member organization, a person may feel that the uniqueness of their own situation is identifiable regardless of our best efforts at ensuring anonymity. So, if you feel uncomfortable providing answers due to a perceived loss of anonymity, we understand. If this is your situation, as a minimum, please do three things for us:

1. Read through the survey, you'll get a sense of what's there, and perhaps you'll have a change of heart and elect to provide the information anyway . . . if not . . .
2. Place the unanswered response sheet into the return envelope. Returning the unanswered response sheet will send a powerful message that the demographics issues of our survey work might need more work.
3. Please complete and return the last (pgs 9 & 10) portion of the survey . . . it elicits important data and no demographic information is required.

Thanks,



Scott D. Rising, MAJ, NDANG
Quality Advisor

North Dakota Air National Guard Culture Survey

BEFORE you take the survey, I want to thank you for taking the time to provide your personal assessment of how the Hooligans are doing. The survey is an initial look at the military culture of each unit (squadron or flight) that collectively makes us the 119 FG. The results of this survey will be used at all levels of our organization to help determine where we can best focus our improvement efforts. On behalf of the ND Air National Guard Quality Council . .

Thank You Again,

Allen J. Henderson

BG Allen J. Henderson
Chief of Staff, NDANG

GENERAL INFORMATION . . .

1. **YOUR SURVEY PACKET SHOULD CONTAIN:** 1 Answer Sheet; 1 Return Envelope (marked for return to the 119 FG/PQ); and the Eleven-page Instruction / Question Sheet.
2. Please use a Dark (#2) Lead pencil to complete the answer sheet. Fill the spaces and clearly erase changes responses. You may write on your survey sheet if you wish, it is yours to keep.
3. The EARLY group of questions (pgs 2 & 3) are looking for basic demographic information. Answer all survey questions in your assigned military role (not full-time role). The 119 FG/PQ (Quality) office has made every effort to insure your response is anonymous. Accurate demographic information is important so that improvement efforts can be targeted at the appropriate level.
4. The MIDDLE group of questions (pgs 4 - 8) look for your response based on the following scale:

1 = Strongly Disagree 2 = Disagree 3 = Neutral (neither agree nor disagree)
4 = Agree 5 = Strongly Agree

A larger version of these responses can be found on the last page (page 11) of this handout for you to detach and use while you are answering questions. Please answer all of the questions. If a question does not "fit" for any reason, please answer it as best you can and then comment on the question in the last section of the survey.
5. The LAST set of questions (pgs 9 & 10) are open-ended and intended to gather your specific feedback. You may choose to provide it anonymously or you can put your name and phone number on it so we can ask you questions about the responses if and when that need arises.
6. When you complete the survey, please place the numbered answer sheet in the envelope marked 119 FG/PQ. Your responses for pages 9 & 10 can be included in the unmarked envelope or you can forward them to the 119 FG/PQ as stated on page 9.

Survey Demographics . . .

1. Which of the following BEST describes your current position?

- | | |
|------------------------------------|-------------------------------|
| 1 = Group or Squadron Commander | 2 = Field Grade Officer |
| 3 = Company Grade Officer | 4 = 9 Skill Level (Duty AFSC) |
| 5 = Not Listed In This Group. | |

2. Which of the following BEST describes your current position?

- | | |
|-------------------------------|-------------------------------|
| 1 = 7 Skill Level (Duty AFSC) | 2 = 5 Skill Level (Duty AFSC) |
| 3 = 3 Skill Level (Duty AFSC) | 4 = 1 Skill Level |
| 5 = Not Listed In This Group. | |

3. I am a member of the following Group, Squadron, Flight, etc.

- | | |
|------------------------------|-------------------------|
| 1 = NDANG State Hqtrs | 2 = 119 Fighter Group |
| 3 = 119 Operations Group | 4 = 119 Logistics Group |
| 5 = Not Listed In This Group | |

4. I am a member of the following Group, Squadron, Flight, etc.

- | | |
|--------------------------------|----------------------|
| 1 = 119 Medical Sqdm | 2 = 178 Fighter Sqdm |
| 3 = 119 Civil Engineering Sqdm | 4 = 119 Services Flt |
| 5 = Not Listed In This Group | |

5. I am a member of the following Group, Squadron, Flight, etc.

- | | |
|------------------------------|--------------------------------|
| 1 = 119 Maintenance Sqdm | 2 = 119 Logistics Support Sqdm |
| 3 = 119 Mission Support Flt | 4 = 119 Security Police Sqdm |
| 5 = Not Listed In This Group | |

6. I am a member of the following Group, Squadron, Flight, etc.

1 = 119 Communications Fit 2 = 119 Ops Support Fit

3 = Detachment #1 4 = 119 Support Group

5 = I don't know.

7. I am a full-time employee of the ND Air National Guard.

1 = Yes (AGR, State Employee or Technician) 2 = No

8. I have completed ___ years of formal education.

1 = 12 or less. 2 = 13/14 3 = 15/16 4 = 17/18 5 = 19 or More.

9. Last Year (01 Oct 93 - 30 Sep 94) I participated in ___ drills (4 per weekend).

1=<36 2= 36-39 3= 40-43 4= 44-47 5= All 48

10. Last Year (01 Oct 93 - 30 Sep 94) I completed ___ days of Field Training (not Special Training or Title 10 Duty).

1= 0 2= 1-10 3= 11-15 4= 16-20 5= 21 or >

11. I could be available for ___ additional days (beyond my current FY allocation of field training days) of Field training days this fiscal year.

1= 1-3 2= 4-6 3= 7-10 4= 11-15 5= 16 or >

12. The following questions focus upon tobacco use within the group. Please pick the answer which most closely fits your situation . . .

1= Never have been a user of tobacco product(s).

2= I am currently a tobacco product(s) user.

3= I have quit using tobacco products within the last three years.

4= I quit using tobacco products three or more years ago.

Survey Section 1: Work Place Environment . . .

(Assess the day-to-day working conditions, prevailing attitudes and/or climate of your work unit)

Definition of "Unit": The lowest work group you are assigned to (Shop, Section, Branch, Squadron/Flight, Group or State Headquarters).

13. I exercise initiative and suggest improvements within my unit.
14. My unit implements my ideas and/or suggestions.
15. My unit's regulations and operating instructions are clear and relevant to my job.
16. My unit is willing to change established policies, procedures and work methods to improve quality.
17. The unit above my unit is willing to change established policies, procedures and work methods to improve quality.
18. My unit has clearly defined goals.
19. My unit has clearly defined objectives (steps) to achieve those goals.
20. My unit's goals are achievable.
21. I consider myself part of the "team" in my unit.
22. The other members of my unit would say I exercise initiative for improvements.
23. Work activities are well planned in my area.
24. My unit identifies duplication of effort.
25. My unit takes action to eliminate duplication of effort.
26. My unit's workload is fairly distributed.
27. A spirit of cooperation and team work exists in my unit.
28. I receive the training I need to do my job.

- 29. I have the resources I need to do my job.
- 30. I am afforded the time necessary to do my job well.
- 31. I receive feedback that those depending on my work are satisfied with my product / output.

Definition of "Supervisor": Your immediate supervisor.

- 32. My supervisor's actions show that he/she wants me to succeed in my job.
- 33. My supervisor shows confidence in my ability to do the job right the first time.
- 34. My supervisor encourages me to identify nonproductive work in my unit.

Survey Section 2: Job Satisfaction . . .

(Assess some factors that contribute to enhanced performance, sense of accomplishment and personal fulfillment from your job.)

- 35. I know what is expected of me concerning my job performance.
- 36. I know my job description.
- 37. My actual duties match my job description.
- 38. The tasks I perform are free of rework and waste.
- 39. I receive constructive feedback on how I am performing in my job.
- 40. My actual performance is accurately measured against established standards within my unit.
- 41. The meetings I attend have a defined purpose.
- 42. The meetings I attend achieve their purpose.
- 43. I enjoy my job.

Survey Section 3: Mission . . .

(Assess some of the factors that impact your unit's mission and goals as they relate to improving the 119th FG's mission readiness.)

44. I know my unit's mission.
45. I know how my work contributes to my unit's mission accomplishment.
46. The training I receive is well planned.
47. The training I receive is effective toward mission accomplishment.
48. I feel confident that I can execute the duties of my current position.
49. I am confident I have the training I need to accomplish the mission.
50. My unit has the training we need to accomplish our mission.
51. My unit has the resources we need to accomplish our mission.
52. My unit's performance measurements accurately measure unit effectiveness.
53. I am prepared for a short-notice (24 hours) 30 to 90 day deployment.

Survey Section 4: Communication . . .

(Assess the effectiveness of communication and feedback within your Unit.)

54. My unit has effective communication channels.
55. My supervisor asks me for my input on decisions that will affect me.
56. My supervisor uses group meetings as one way to discuss problems / possible solutions.
57. My supervisor provides instructions that enable me to meet his / her expectations on a given task.
58. My supervisor tells me what is going on at higher levels within our organization.

59. I feel comfortable saying what is on my mind in the presence of my supervisor.
60. I receive recognition for doing my job well.
61. I receive respect for doing my job well.
62. I receive recognition for working with others to solve problems / improve the way we do our work.
63. I receive timely information about future unit events.
64. I receive enough information about future unit events.
65. My unit successfully collaborates / cooperates with other work centers within our organization (Sqdm / Flight).
66. My unit successfully collaborates / cooperates with other organizations (Squadrons / Flights) within the 119 th Fighter Group.
67. There is someone in my unit who will listen to understand my concerns about my job / career.
68. There is someone in my unit who will listen to understand my concerns about me / my family.

Survey Section 5: 119 FG Quality Initiative . . .
(Assess the impact of the 119 FG Hooligan Initiative within your unit.)

Definition of the Hooligan Initiative: The Hooligan Initiative is a leadership effort to sustain an operating style which creates a working climate that promotes trust, teamwork and continuous improvement in everything we do.

69. I have received training on the basic principles of the Hooligan Initiative.
70. I understand the basic principles of the Hooligan Initiative.
71. My unit commander's actions demonstrates his/her support of the Hooligan Initiative.

- 72. My supervisor's actions demonstrates his/her support of the Hooligan Initiative.**
- 73. I support the Hooligan Initiative.**
- 74. The Hooligan Initiative gives me an opportunity to make real and lasting improvements in my unit.**
- 75. My supervisor keeps informed on our progress toward meeting unit goals and objectives.**
- 76. My supervisor is more interested in striving for continuous improvement than just meeting goals for their own recognition / advancement.**

FINAL COMMENTS: These comments can be returned through our normal distribution process by placing them in an envelope and addressing it to PQ. A second option is to mail it to:

119 FG / PQ, 1400 28th Ave No, Fargo ND, 58102-1051.

A. Three (3) things the NDANG should KEEP doing:

1.

2.

3.

B. Three (3) things the NDANG should START doing:

1.

2.

3.

C. Three (3) things the NDANG should STOP doing:

1.

2.

3.

APPENDIX B

119th Fighter Group Unit Self Assessment Executive Summary

**119 FIGHTER GROUP, NORTH DAKOTA
AIR NATIONAL GUARD**

VISION STATEMENT

**Community based volunteers ...
Committed to excellence ...
Building the best air combat team ...
Serving our state and nation.**

MISSION STATEMENT

Provide accessible combat ready professionals, trained and equipped to accomplish air sovereignty operations and other state and federal tasking.

KEY PERSONNEL

| (Name) | (Position) | (DSN) |
|------------------------------|--------------------------------------|----------|
| Col Michael J. Haugen | Group Commander | 362-8100 |
| Lt Col Conrad W. Krabbenhoft | Executive Support Staff Officer | 362-8105 |
| Col Roger W. Larsen | Support Group Commander | 362-8200 |
| Lt Col Maurice E. Borud | Logistics group Commander | 362-8400 |
| Lt Col Thomas E. Larson | Operations Group Commander | 362-8500 |
| Col James A. McAndrew | Medical Squadron Commander | 362-8132 |
| Lt Col Daniel W. Redlin | Det 1 Commander | 947-4351 |
| | Air Force Advisor | 362-8520 |
| Lt Col Wesley R. Belter | Logistics Squadron Commander | 362-8305 |
| Lt Col Marvin G. Larson | Maintenance Squadron Commander | 362-8406 |
| Lt Col Lawrence H. Woodbury | Civil Engineering Squadron Commander | 362-8210 |
| Maj Randall D. Herman | Mission Support Flight Commander | 362-8240 |
| Lt Col Lyle M. Andvik | Chief of Safety | 362-8522 |
| Maj Randall D. Herman | Director of Personnel | 362-8240 |
| Lt Col Richard J. Utecht | 178 Fighter Squadron Commander | 362-8504 |
| Maj Gary L. Sortie | Security Police Squadron Commander | 362-8287 |
| Maj Mark R. Ugelstad | Communications Flight Commander | 362-8250 |
| Maj Paul H. Adams | Services Flight Commander | 362-8232 |
| Maj Joan M. Bentz | Comptroller | 362-8310 |
| Maj Alan W. Palmer | Chief of Supply | 362-8340 |
| Maj Terry W. Sando | Base Quality Advisor | 362-8198 |
| Col Albert E. Lerberg III | USA Project Officer | 362-8154 |

OVERVIEW

119TH FIGHTER GROUP UNIT SELF ASSESSMENT EXECUTIVE SUMMARY

The 119th Fighter Groups first Unit Self Assessment was accomplished in the Spring of 1995. USA team members from all groups, squadrons and flights within the unit participated in this assessment to ensure a comprehensive "snapshot-in-time" was conducted. This, coupled with a base-wide commitment to the quality culture, has given us great introspect as to the state of our unit and the direction we are headed.

The HOOLIGAN INITIATIVE is a serious accord designed to guide us into tomorrow by allowing us to look into the past, understand our present, and develop a strategic plan to shape our future. Yesterday, Today, and Tomorrow is the axiom, Continuous Readiness is the goal.

Category 1, Leadership. Throughout the 119th Fighter Group it is widely accepted that there is a *TRUE* "open door" policy in effect. The results of this program speak for themselves in the myriad of awards, decorations, and accomplishments this unit has attained. Relentless commitment to our customers, unit members, and the community, is a key contributor to the success of the 119th Fighter Group. Although the Commander's commitment to quality is evident, a continued emphasis on supporting and establishing quality processes is essential.

Category 2, Information and Analysis. Large amounts of raw data are being continually generated/collected throughout the organization. Much of this data is being utilized for day to day decision making. However, there is no systematic process in place to establish and identify data necessary for statistical analysis to implement continuous improvement for key processes.

Category 3, Strategic Quality Planning. Historically, planning has been reactive in nature, driven by tasking, events, and exercises. Quality awareness training has increased awareness of quality planning processes throughout the organization. This awareness is reflected in current planning activities such as facilities design and space utilization and long range energy saving initiatives. The newly established Air Quality Council, and Partnership Council will be beneficial to all planning activities.

Category 4, Human Resource and Development and Management. The most important resource of the 119th Fighter Group is it's people. Our strong midwestern values and work ethic support a culture which fosters empowerment and pride of ownership. The many accomplishments of the organization are attributed to this climate of Hooligan teamwork. Satisfaction among members is evidenced by a low turn over rate and strong unit morale. However no systematic processes are in place to evaluate and ensure that these trends continue. The development of processes to accurately measure personnel satisfaction and well-being is necessary for continued success in the future.

Category 5, Management of Process Quality. Many informal processes are in place to ensure all tasks are accomplished as defined by mission requirements. Contributing factors to continuous process improvements are priorities of need, resources available, and ingenuity of our people to define solutions and produce results. These factors, linked with an organizational attitude that there is always a better way, have led the 119th Fighter Group to the world class unit we are. This is evidenced by the recent victory at the USAF Air Superiority Weapons Competition (William Tell), and our world class flying safety record, winning our second Hughes Trophy, and our third consecutive Outstanding Unit Award. As we continue along the quality journey we will find innovative ways to improve our processes and product design to increase our successes in the future.

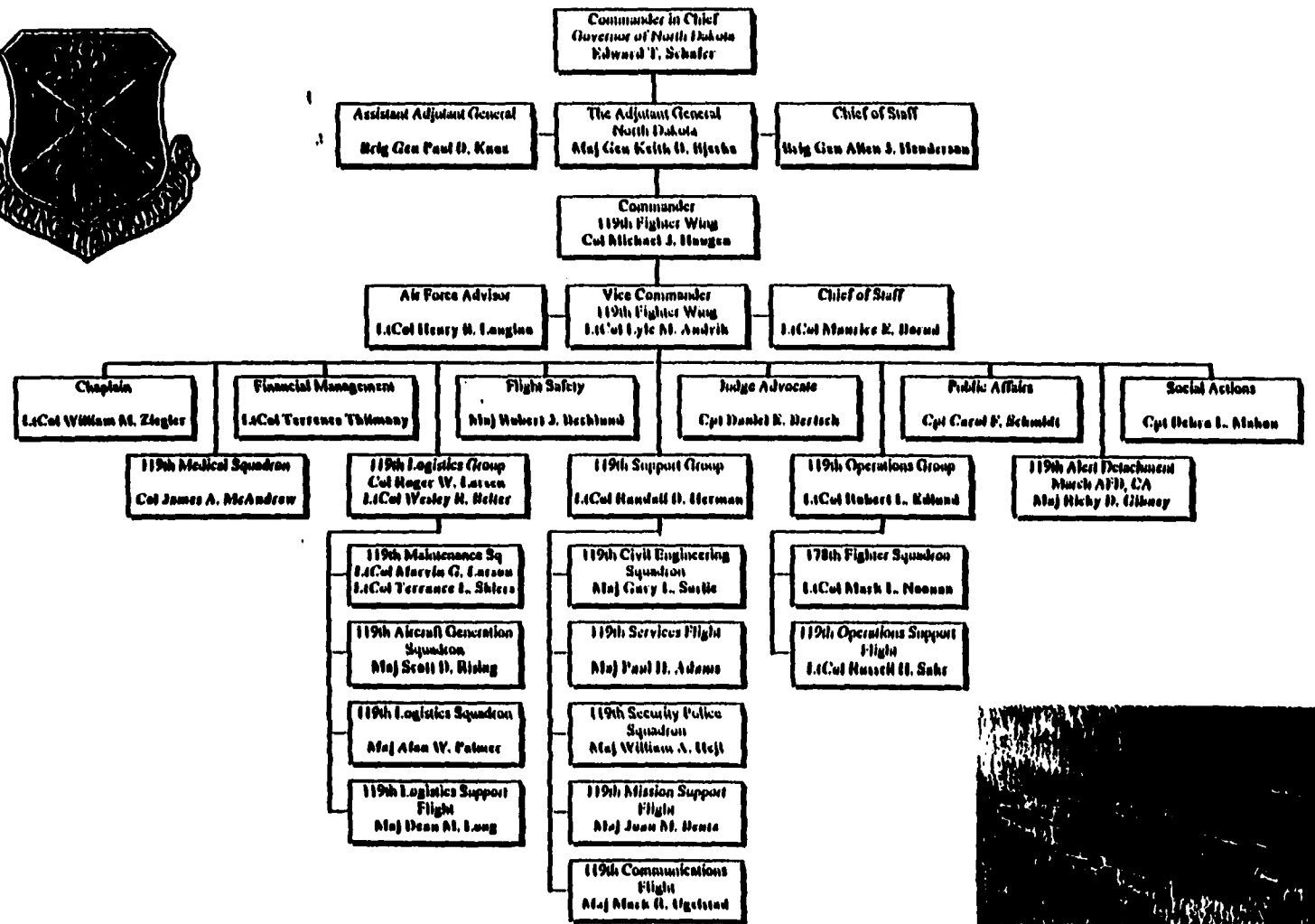
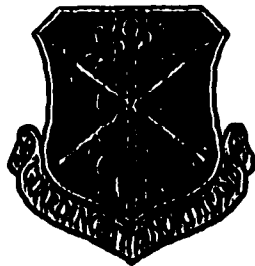
Category 6, Quality and Operational Results. Positive operational results are indicated by the numerous unit wide awards and records established by the North Dakota Air National Guard. Many individual areas are utilizing creative, efficient methods to obtain these results. The implementation of quality tools and techniques, including comparisons and benchmarks will enhance the ability of our unit to evolve and develop methods of perpetual improvement. Systematic methods of acquiring feedback and data for analysis will enhance our capability to measure additional result areas more effectively in order to plan for future requirements

Category 7, Customer Focus and Satisfaction. Formal and informal methods are used to determine customer satisfaction on an on going basis. Customer feedback has prompted proactive involvement in many projects. Repeat requests to participate in a variety of exercises and events from various agencies are strong indicators of customer satisfaction. We maintain our commitment to providing our customers with unparalleled performance promoting trust and confidence in our ability as a combat capable unit. We are just beginning to develop a systematic process for collecting data to evaluate the level of our customers satisfaction and enable us to determine future customer needs.

APPENDIX C
ORGANIZATIONAL CHARTS

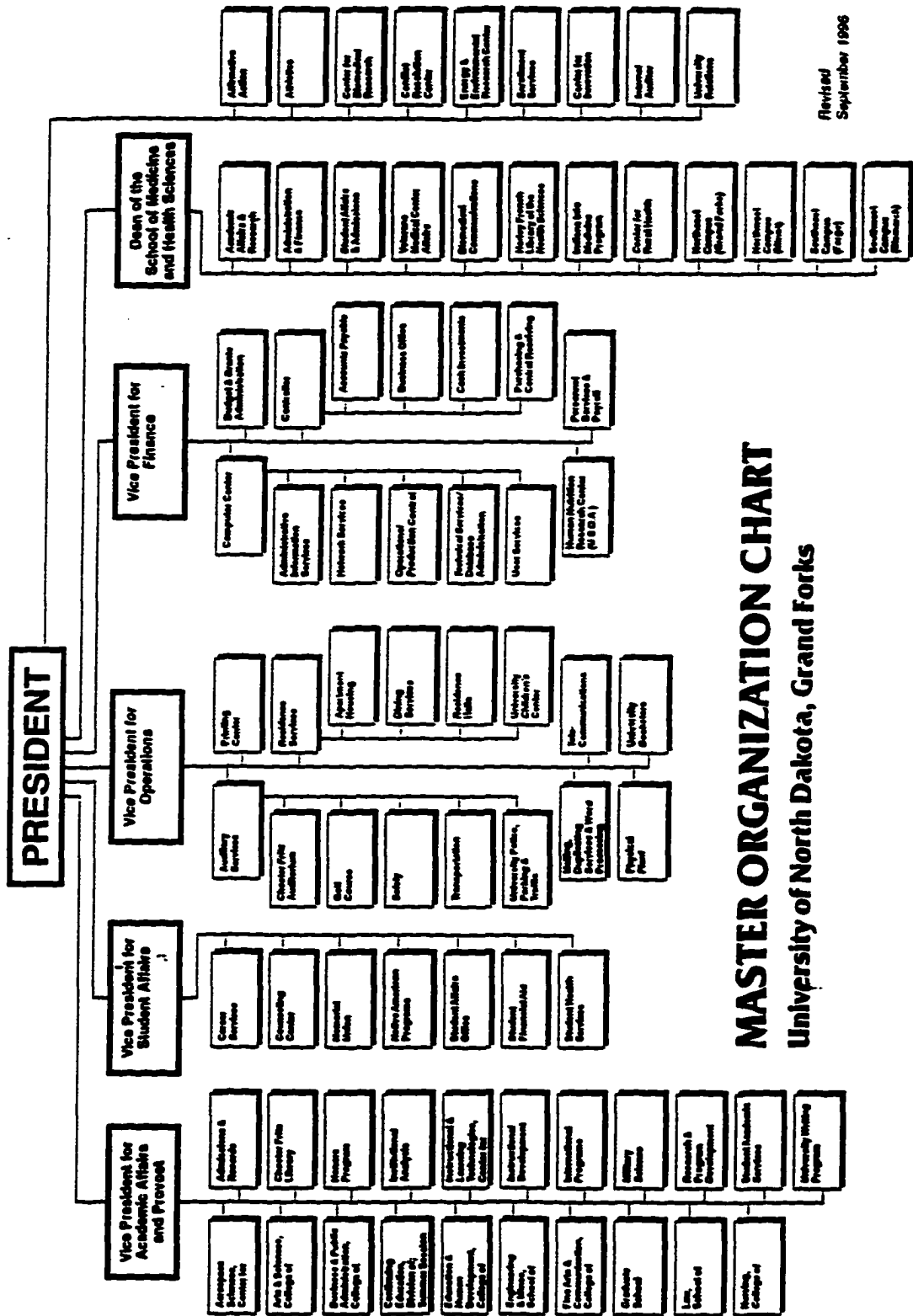
Sep 18, 96

The North Dakota Air National Guard



The Happy Hoolligans





Revised September 1998

MASTER ORGANIZATION CHART

University of North Dakota, Grand Forks

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FOOTNOTES

1 For information on medical restrictions please contact your local recruiter or W. G.

Ishaug at the 119th Fighter Wing, Fargo, North Dakota.

2 The 119th changed from a Fighter Group to a Fighter Wing in 1995.