

Abstract

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**Leveraging Leadership
For Better Business:
A Look at Civil Engineering
in the Air Force**

by

**Jeffrey J. White, Captain, USAF
Civil Engineering Officer**

**B.S. United States Air Force Academy, 1995
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**A project submitted to the
Faculty of the Graduate School of the
University of Colorado, Boulder
In partial fulfillment of the requirements for the degree of
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Abstract

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1.0 Introduction

1.1 Why this project was undertaken

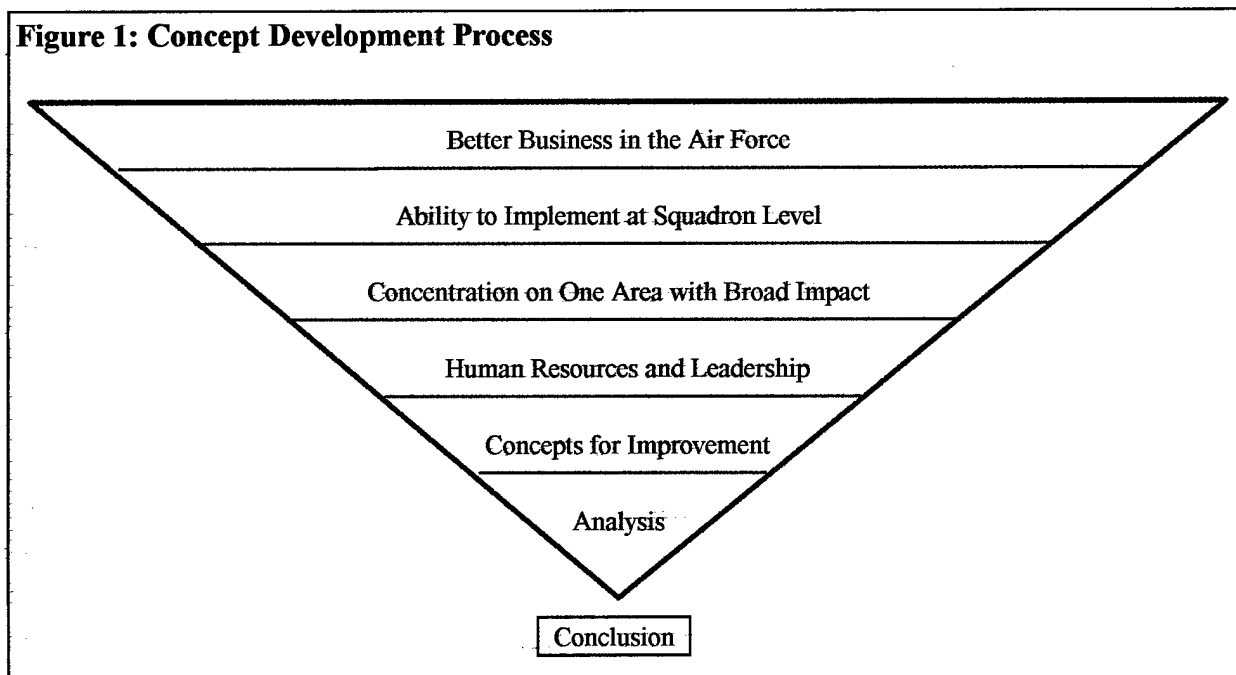
The commercial environment is driven by competitive forces that demand operational excellence, customer intimacy and product leadership (Treacy 84). Government organizations, on the other hand, are often considered unwieldy in size, expensive and slow to react. This dichotomy does not have to exist. With regard to Civil Engineering (CE) in the United States Air Force there are many direct parallels to commercial practices. Rather than creating separate systems for the two environments, it may be possible for this government organization to capture the benefits of the competitive market. Instead of competing independently Air Force CE may be able to tag along shortly behind the leaders by “riding on the coattails” of commercial success. This project was undertaken to determine the current trend in advancement, to find potential gaps between commercial industry and the military, and to explore how these gaps may be reduced through the implementation of specific action.

In extension of these objectives, this project is designed to offer a range of actions that go from immediate implementation to significant efforts that require changes in Air Force (AF) regulations and Department of Defense (DOD) operations. This is an important aspect because many people feel that the government is a massive beast that does not heed the inputs of the individual. However, there are actions that may be executed at the local level in order to improve business results within Air Force Squadrons. This provides more opportunity for leaders to undertake these actions without having to wait on the Air Force to implement system wide changes. The additional benefit of this is a shift in focus from traditional cost-driven efforts to leveraging current resources more effectively.

1.2 Expected Outcome

Current initiatives in the Air Force will be used to establish a trend for improvement. An analysis of additional opportunities presented by commercial practices and academic studies will be used to extrapolate a new trend line. With reference to Michael Treacy's and Fred Wiersema's article in the *Harvard Business Review* there are three primary categories of business focus. For Air Force Civil Engineers the monopolistic environment eliminates some of the advantages of customer intimacy offered in commercial industry. The service orientation of the work along with the monopoly conditions reduce product leadership requirements as well. Although these two areas still play an important role, there is greater benefit in narrowing the primary focus to operational excellence. The expected outcome of this project is to establish opportunities for AF Civil Engineering that will allow business to be conducted with improved efficiency, higher quality, better timeliness and improved mission capability while reducing cost and force structure. Illustrated below in Figure 1 is the intended path that this project will follow.

Figure 1: Concept Development Process



1.3 Catalysts for Change

The changing world environment has been the catalyst for a majority of change within Civil Engineer Squadrons. With the demise of the Soviet Union the chief threats to our national security dramatically changed. Without a major rival in the arms race the military is experiencing significant budget cuts. Despite a draw-down in funds the same job is still being done. "Since 1989, deployment requirements have quadrupled, while permanent forward basing has decreased by 66 percent" (1998 AF Posture Statement). These events are forcing major changes to occur within the armed forces.

Currently, the Department of Defense in conjunction with the Headquarters of the Air Force has developed its strategic plan summarized in the Quadrennial Defense Review and expanded by Joint Vision 2010 (AF News webpage). These documents outline the force structure and operational goals to be achieved within the Congressionally mandated budget. Air Force civil engineers play a vital role in the system. They must fully support the mission while contending with decreased funding. Along side the need to 'do more with less' is the understanding that these squadrons are stewards of the public trust. Their responsibilities impact land use, facility construction and maintenance, and protection of the environment as well as spending wisely.

1.4 Overview of Air Force Civil Engineering

The primary mission of Air Force Civil Engineers is "to provide, operate, maintain, restore, and protect the installations, infrastructure, facilities, housing, and environment necessary to support air and space forces having global reach and power, across the range of military operations" according to the Office of the Civil Engineer in the Headquarters section for Installations and Logistics (HQ IL webpage). This charter outlines their duty to perform public works, construction, operations and maintenance of facilities and equipment as well as

environmental protection. Forces are organized to support this in a typical pyramid hierarchy (Figure 2), however, a matrix format is used in the deployment of forces (Figure 3). When squadrons are at their home base they support the mission of that base and the Major Command (MAJCOM) which they fall under. For instance, Peterson Air Force Base (AFB) falls under Space Command. As depicted below, the MAJCOMs report to headquarters which, in turn, reports to the Secretary of the Air Force.

Figure 2: Air Force Command Hierarchy

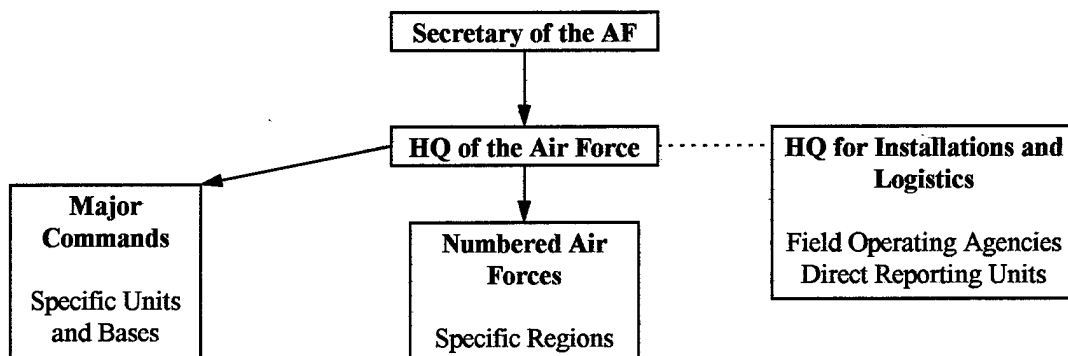


Figure 3: Matrix Organization

MAJCOM	Numbered Air Forces				
	Atlantic	Southern	Pacific	Europe	Central
Force Providers					
Air Combat					●
Air Mobility					●
Air Material					●
Space Command					●
Special Operations					●

(Appendix A)

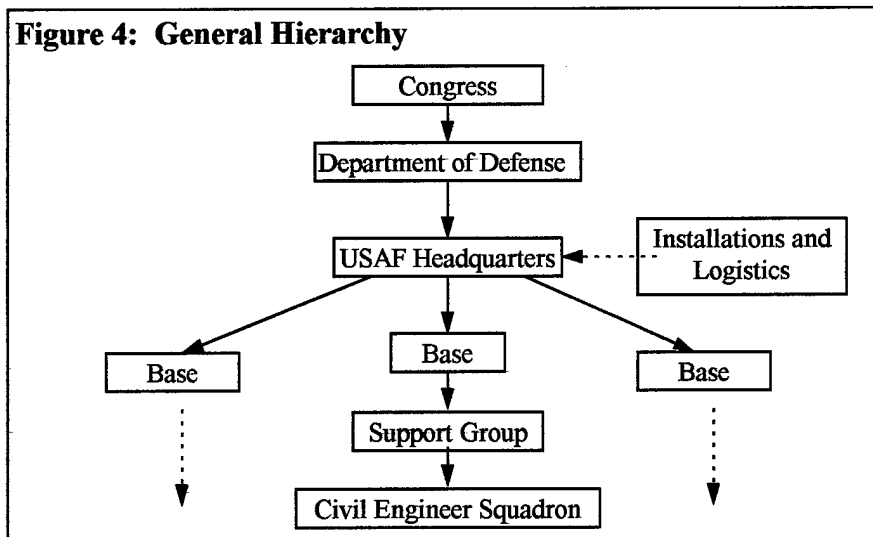
In contingency environments, the forces are released from their MAJCOM and subordinated to one of the numbered Air Forces (Figure 3) in a matrix style organization. Each of

the numbered Air Forces is responsible for operations in a defined region of the world which allows integration of the various forces toward a common objective. For example, 9th Air Force is designated as Central Air Force (CENTAF) because it controls forces in the central region known as the Middle East. This is the organization responsible for working with the other services to monitor and control Operation Southern Watch for the no-fly zone over Iraq. In these environments, the Civil Engineer Squadron maintains the same mission under new leadership at a different base.

Within the squadron hierarchy manpower is allocated with a 60% to 40% mix of military to civilian employees. This provides a stable backbone for each base. While military members are subject to frequent transfers and deployments, the civilian workforce provides the continuity and historical knowledge required to keep day to day activities going. Positions are intermingled so that civilians may supervise military members and vice versa. Typically, upper management slots are reserved for officers and the deputy positions are held by civilians to develop the serviceman's leadership while maintaining continuity. Although much of the structure is mandated by Air Force regulations, the squadron does enjoy a certain level of autonomy in allocating resources and manpower dependent upon base-specific requirements.

Change within the organization is initiated at a number of points in the system. At the upper most level, congressional oversight and budgeting outline general requirements. One of the important factors at this level concerns 'the color of money.' Congress allocates money into special categories that may only be used for specific purposes. This serves as a safety measure for the public trust, yet binds the hands of the Air Force in matters such as building a new facility (construction) or repairing leaking roofs (operations and maintenance). Just below the congressional level changes may be initiated by the Headquarters of the Air Force. This is often a

result of adopting specific concepts to adhere to budgetary outlines. For instance, outsourcing and privatization have been initiatives to manage the ongoing budget cuts. Other changes are suggested by the headquarters branch for Installations and Logistics (HQ/IL) to improve efficiency and effectiveness.



The next significant point of entry for changes occurs at the Wing / Base level (Figure 4). The autonomy of the squadron is usually respected while the commander outlines

requirements and objectives to support the flying mission. This is typically refined by the Group Commander who has more direct input on how things will be accomplished. The commander of the Civil Engineer Squadron ultimately has the autonomy to operate the organization within the limitation of specific manpower documents and regulations. Oddly enough, other than the rank held by personnel at each of these levels, there is little formalized training or education, outside of their past experience, that appropriately qualifies them to make significant changes.

2.0 Background

Civil engineering in the Air Force is an extremely broad term that encompasses a vast number of activities. This is best demonstrated by its functional breakdown into flights: Operations, Engineering, Housing, Environmental, Resources, Fire Protection, Disaster Preparedness, and Explosive Ordnance Disposal. With this wide range of requirements from

public works to construction and explosives, it is possible to find an abundance of resources that discuss practices in each field. The objective of this research project is to isolate common characteristics in these functions that will allow effort to have a broad impact. The narrowing of potential areas of focus is developed in this Background Section and refined in the Methods Section of this project.

2.1 Better Business - Current Status

Better business is a broad statement that commonly includes efforts for improving efficiency, quality, timeliness and mission capability while reducing cost and force structure. The Air Force Outstanding Civil Engineer Unit Award, outlined in Air Force Instruction (AFI) 36-2817, is based upon achievements and exemplary performance in the following areas: Readiness, Resources Management, Environmental and Resource Conservation, Community Relations, and Quality Air Force Initiatives and Assessment. Although the Air Force has many good examples for each of these, the underlying theme is still driven by the efforts to cut costs rather than improve efficiency. The aspect of improved efficiency has been more of a repercussion than a well defined intent. The big topic is outsourcing of non-mission critical areas within the squadron. This includes areas such as the housing and environmental flights which contain almost all civilian employees. Privatization is another hot topic that includes transferring utilities and the maintenance thereof away from military responsibility. In particular, these efforts have targeted electrical distribution, water and sewer systems, and water/wastewater treatment facilities.

To their benefit, the Air Force has developed several initiatives to improve efficiency and effectiveness. 'Centers of Excellence' have been established to consolidate intellectual capital and serve as a reservoir to disseminate information to units. The Air Force Civil Engineering Support Center (AFCESA) has been extremely beneficial to all CE units throughout the world. They help

to pass along information on the best practices including well-written contracts and activities conducted by bases. On the contingency side, there is the Air Force Contract Augmentation Program (AFCAP) for deployments and natural disasters. Rather than maintaining a large force in times of peace this concept is designed to maintain a smaller core team which is supported by 'on-demand' contract forces in order to fulfill mission requirements.

The focus on learning with regards to human resource management places a significant effort on initial training. After this, the training dramatically decreases with occasional professional education and skill development along with testing requirements. Over the course of a typical twenty year military career there are only two to three Professional Military Education (PME) requirements. Additionally, college tuition is available to support the broad learning that widens the individual's perspective. Special training and conferences are an ongoing part to staying current with training. Beyond this, military members frequently switch job positions and assume different responsibilities in order to gain a more comprehensive understanding of the squadron and its role in supporting the mission. Unfortunately, there is little, if any, training provided on effective leadership techniques. The current system appears to run by the 'live and learn' principle.

2.2 Comparison with Mainstream Commercial Industry

A majority of efforts undertaken by the Air Force are a direct result of seeing the successful implementation of similar concepts in commercial industry. This includes, but is not limited to, outsourcing for cost reduction, centers of excellence and education of craftsmen within the organization. In each case there is a measurable lag between commercial and military implementation that serves as a safety net against concepts that fail during commercial implementation. Always being one step behind provides the government with the opportunity to

mark and track several concepts being pursued that may offer benefits to Air Force Civil Engineers.

The focus of this research project remains on establishing concepts that may be quickly initiated in part, or in entirety, and that offer advantages to the work environment. For starters, the value of soft sciences such as psychology and sociology are being exploited. As the move from the industrial era progresses, the United States finds itself entering an intellectual era that places a premium on learning and the retention of intellectual capital. This has significantly changed the requirements of human resource management in the work place. In particular, new emphasis is being placed on leadership styles, motivation techniques, fulfillment of personnel, and relationships in the work place.

The attitude in business has always been that conventional merit pay was the best motivator (Ettore 8). This mental model establishes that people will be driven by the salary they are offered or that additional performance may be bought with bonuses and overtime. Barbara Ettore in her article published in *Management Review* says that "companies should realize that the dollar value of incentives is not as important to workers as the way that such rewards are granted. Moreover, recent studies demonstrate that salary does not motivate high-performance workers, who respond better to praise and recognition." Marilyn Kennedy adds to this thought in a separate article: "Many people have a financial set point, and when they go beyond that point, money fails to motivate them to work harder... Organizations need to recognize this trend and start considering motivation as an individual or generational issue rather than assuming that everyone will be motivated by money." Understanding psychology and individual employees becomes an important management tool to drive productivity.

Many organizations believe in the importance of relationships and the potential impacts on the entire organization. David Garvin in "Building a Learning Organization" specifies the need that "learning organizations cultivate the art of open, attentive listening" (87). He goes on to say that, "Boundaries inhibit the flow of information; they keep individuals and groups isolated and reinforce preconceptions" (91). These concepts apply to managers who must deal with employees just as much as it applies to individuals working with others on teams.

Jon Katzenback in "The Discipline of Teams" refers to the joint contributions on teams as making "possible performance levels greater than the sum of all the individual bests of team members" (112). This relates to the current use of high performance teams in the workplace. Interpersonal skills in handling and maintaining relationships is a vital part of communication and constructive conflict (115). All of these things are important and cannot be reiterated enough. Chris Argyris cites one situation that he studied in which people knew about problems but never pointed them out to others (78). He depicts a scenario where a company's environment was such that individuals could not communicate negative input, although constructive and of benefit to the company (78). Clearly, strong relationships offer great potential for improvements in organizations.

Communication is perhaps the most important part of this. Understanding how to improve dialogue and discussion without triggering defensive mechanisms is difficult but well worth the effort. Taking this one step further, industries are utilizing these concepts to improve their management and personnel with 360 degree feedback (Cognology Webpage). In this situation, feedback is sought from not only supervisors, but peers and subordinates as well. This provides a much better perspective on the ability of the individual in the work environment. The system has a much greater potential when all of these relationships are understood and effectively

managed. The growing use of soft sciences is harnessing a huge reservoir of untapped potential in today's workforce. The potential benefits to Civil Engineering in the Air Force are enormous.

2.3 Current Academic Research

Academic resources have always tested the boundaries of modern thought in order to create new bodies of knowledge. This holds true for civil engineering just as it does with any other career field. Researchers are often able to jump out of current ruts in the industry and explore uncharted territories of enormous potential to industry. Some of these new theories which test the old paradigms include lean construction, emotional intelligence (also known as emotional quotient), relationship theories, motivation and fulfillment of employees.

Emotional quotient was first introduced in full scale by Daniel Goleman. His article in the May 10th edition of *Engineering News-Record* defines this concept as "the capacity to manage ourselves and our relationships effectively" (167). Anne Fisher, one of his associates, was quoted by *Fortune* magazine as saying that "emotional competencies are twice as important to people's success today as raw intelligence or technical know-how" (293). This concept parallels that of the intelligence quotient (IQ), but covers some of the soft science concepts such as communication skills, interpersonal skills, initiative, persuasiveness, trustworthiness, adaptability and talent for collaboration. "What set the top performers apart was a range of emotional intelligence-based competencies..." (167) says Daniel Goleman in reference to engineers. Although strong technical skills are still necessary, organizations must consider the potential leadership ability before promoting individuals up the corporate ladder.

This new concept of emotional intelligence is based upon other theories that have been around for many years. Deming establishes psychology as one of his four aspects in the 'Profound System of Knowledge' and says that it "helps us to understand people, interaction

between people and circumstances, interaction between customer and supplier, interaction between teacher and pupil, interaction between a manager and his people and any system of management” (107). The literature offering insight to relationships in the workplace is growing daily in professional journals in every career field. Understanding the concept of relationships is vital to transforming organizations.

Good relationships foster growth and promote learning while bad ones create defensive routines. In the magazine entitled *The Futurist*, Roger Herman states that “the ability to nurture strong, collaborative relationships with employees will determine whether a business evolves over time or gets lost along the way.” Henry Boettinger shows the complexity of the system by saying “a manager must understand not only the persons in his own organization but...those beyond the perimeter of his control...” (57). These thoughts are key to developing better engineers. In Daniel Goleman’s opinion they “need to know how to develop and execute ideas as a part of a team, how to sell an idea, take criticism, accept feedback and adapt” (167). Clearly these authors are establishing a foundation for these theories that will be extensively used as companies continue into the intellectual age.

To extend these principles, the art of relationships must be combined with understanding the role of the individual. The Spring 1999 edition of *Human Resource Management* discusses the importance of allowing individual employees to experience some self-determination in their jobs. In their article for this magazine, Manuel London and James Smither claim that “intrinsic functioning can be either facilitated or impeded by social context” (5). Referring to the old adage “you can lead a horse to water, but you can’t make him drink,” we see the underlying truth in the workplace that you can get employees to work but cannot make them optimize their productivity.

London and Smither claim that “choice increases self-determination and intrinsic motivation” (5) while “controlling environments undermine intrinsic motivation” (7). Henry Boettinger in a *Harvard Business Review* article lays out some of the intangible parts of being a manager that apply to this. He touches upon motivation with his comment that it “requires a far deeper understanding of human beings as individuals than brandishing the lash does” (57). Chris Argyris’ article in the *Harvard Business Review* lays the claim that “[managers] need employees with as much intrinsic motivation and as deep a sense of organizational stewardship as any company executive” (85). As these philosophies continue to gain more support they will begin to slowly permeate business practices and eventually enter into government organizations.

There is a substantial difference between motivation and fulfillment. Fulfillment refers to something deeper within each individual that is more than just a paycheck or getting the job done. Joe Hill, in the magazine entitled *Supervision*, establishes ten rules for successful management. One of these is to “help their subordinates to achieve their goals and dreams” (14). Henry Boettinger in *Harvard Business Review* says, “To manage is to lead, and to lead others requires that one enlist the emotions of others to share a vision as their own” (64). This is expanded by Jeanie Duck in her article “Managing Change” where she states, “The new management paradigm says that managing people is managing feelings” (113). It has become obvious that the system has many more benefits for those who are willing to take these changes upon themselves. This will be done by fostering the growth of intrinsic motivation. Fulfillment of the individual will come by capturing their emotions. As with many new concepts the competitive advantage will be captured by the early entrants into this market.

Academic research has always sought to test old principles and find new means of conducting better business. Although many of the theories have great merit, there is still a

significant gap between theory and implementation. Each of the theories discussed will have its unique requirements for success in the workplace. New initiatives often fail due to a lack of commitment and energy. Fortunately, those companies that persevere and successfully implement new theories often achieve a competitive advantage that creates value in the organization. Civil Engineering Squadrons may be able to use these concepts in order to improve their role in supporting the Air Force mission.

2.4 Existing System

The structure of the Air Force in general shows clear evidence of rewarding the concepts that make good managers. The problem arises in the fact that these soft science concepts are not drilled into personnel as are so many other military skills. Hours of conscious effort are placed into marching, rifle drill, marksmanship, and specific skill development. However, formalized leadership and management training is relegated to a few concentrated cram courses: boot camp, Airman Leadership School, and the Non-Commissioned Officer (NCO) Academy for enlisted or Officer Training, Squadron Officer School, Air Command and Staff College (ACSC), and War College for officers. At Moody Air Force Base, Georgia, this fact was recognized. Leaders at this base initiated an interim training program for the lieutenant ranks that consisted of three full days utilizing structured training and presentations. It was designed to integrate previous training with the lieutenant's short work experience to form practical mental models and improve their officership.

Formal recognition of these principles is found in the performance evaluation systems as well as the award programs from the squadron level to that of the Air Force. For the enlisted personnel who conduct most of the hands-on work there is the Air Force Form 910 for the ranks of Airman Basic through Technical Sergeant. Of the seven categories for rating, two directly

apply to leadership skills. These areas include “How well does ratee supervise/lead” and “How well does ratee communicate with others” (AF Form 910). For the officer ranks of 2nd Lieutenant, 1st Lieutenant and Captain, there is the AF Form 707B with six categories. Of these, five directly embody the concept of emotional intelligence. These areas include “Leadership Skills,” “Professional Qualities,” “Organization Skills,” “Judgment and Decisions” and “Communication Skills” (AF Form 707B). The aspects for each category are further developed on the rating form and are consolidated in the table below.

Category	Description
Leadership Skills	Work well with others, fosters teamwork, displays initiative, self-
Professional Qualities	exhibits loyalty, discipline, dedication, integrity, honesty, and officership, accepts personal responsibility, fair and objective
Organization Skills	effective and efficient scheduling and resource use
Judgment and Decisions	timely and accurate, composure in stressful situations
Communication Skills	listens, speaks and writes effectively

Although these evaluations are conducted annually, there is a feedback session with its own form in order to help direct the course of individuals (Appendix D). This provides the opportunity for corrective action to be implemented prior to a formal report entering the personnel file. Further clarification on the evaluation system is provided in Air Force Instruction (AFI) 36-2403 (The Enlisted Evaluation System) and AFI 36-2404 (Guide to the USAF Officer Evaluation System).

Quarterly and annual awards endeavor to motivate comparable qualities. Moody Air Force Base Instruction 36-2803 establishes base guidelines for their program. The senior staff grades each applicant based upon qualities such as leadership and job performance in primary duty, significant self improvement, leadership qualities, military bearing and communication skills

(MAFBI 36-2803). The annual awards for CE personnel at the Air Force level are comparable as outlined in AFI 36-2817 Civil Engineer Awards.

It would clearly seem that the Air Force understands what it wants and has designed these aspects into its evaluation system in order to promote emotional intelligence rather than mere technical competency in its leadership. However, if the leaders who conduct the ratings of subordinates do not have a firm grasp on specific concepts in these areas then they are unfit to pass judgment. The Air Force's Professional Military Education attempts to teach individuals about these qualities. The problem is that it tends to be too much, too late (over compensation). For example, the typical officer comes out of college with officer training and works for an average of six years before more formal training is provided at Squadron Officer School. Training over these years could have been used to develop the officer's skills more methodically rather than making major course corrections almost a third of the way through their career.

3.0 Methods

3.1 Structure of the Project

The structure of this project begins with a definition of the unique Air Force Civil Engineering system in order to provide an understanding of the parts and their interactions with one another. Background information is provided in order to establish a baseline for comparison. The analysis of commercial practices and academic research creates a gap which presents new opportunities that may be explored. For assessment purposes, the field of concepts was narrowed to a select few that offer great benefits in terms of improved quality, efficiency, and responsiveness.

3.2 Research

Initial research began with a broad spectrum approach to uncovering any initiatives that may be of value to the Civil Engineer organization. The Malcolm Baldrige National Quality Award Criteria served as the initial baseline for this study. By reviewing its guidelines it was possible to establish a level of correlation as well as a degree of applicability to squadron level implementation within the Air Force. The nature of squadron organizations made it difficult to draw conclusions due to the government structure, noncompetitive environment and monopolistic relationship with customers.

Despite these unique characteristics an applicability analysis (Appendix B) was conducted to clarify linkages and aid the effort to identify target areas. Due to the hierarchical structure within the Air Force power and influence vary depending on the level of the organization and the criteria being considered. Each section of the Malcolm Baldrige Award was assessed at three generalized levels in order to illustrate the leverage points to facilitate change. The upper tier is defined as the Headquarters of the Air Force which is able to change policy, control funding and allocate manpower (reference Figure 4 in Section 1.4 for the general hierarchy). The second tier is that of the base/wing commander who directly establishes the goals necessary to fulfill the mission. The final tier is that of the squadron which is responsible for carrying out actions within the guidelines mandated by the Air Force and base commander in order to fulfill mission requirements.

This template was utilized to assess the ability of each level to directly exert effort and leverage change on the criteria for performance excellence. Ratings included only a small, subjective range in order to ensure differentiation between categories. Each area was categorized as strong, moderate or negligible in its ability to impact criteria. In this manner it was possible to

establish an understanding of where initiatives would have to begin in order to be successfully used. Of particular interest are the areas in which the Civil Engineer Squadron can exercise a strong influence without requiring the support from upper levels in the hierarchy. These target areas offer the ability to quickly make changes that may offer spill-over benefits into other areas of the organization.

3.3 Selection and Gathering of Information

With the intended target narrowed to a few selected concepts it was possible to draw information from multiple sources to form a common body of knowledge. Current background data on the Air Force was obtained through only official Air Force webpages. By specifically using government links and cross-checking sources, a high degree of information accuracy was maintained. A perspective of current initiatives in the commercial industry was obtained through a blend of recent articles in professional journals, books and the webpages of specific businesses such as consultants. The redundancy of concepts amongst these sources provided assurance that the principles were formalized and gaining strong support. Although no sources provided direct application of principles to the military, the direct correlations between the Civil Engineer Squadron and comparable commercial practices provides prima facia evidence of some applicability.

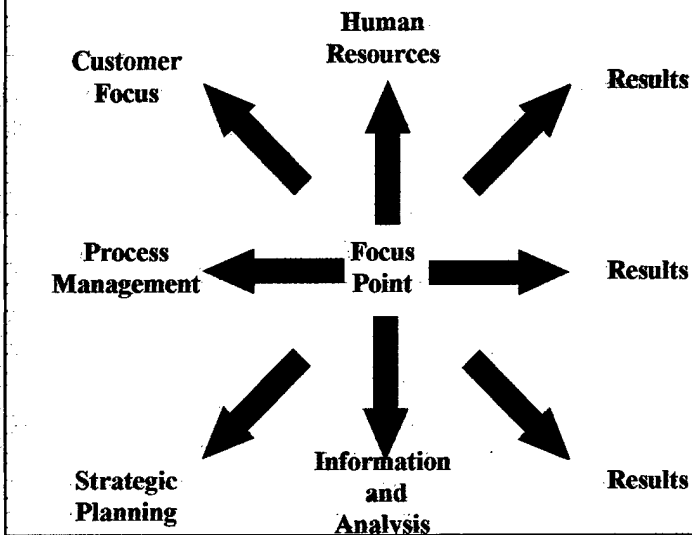
As a capstone, personal interviews from knowledgeable and experienced individuals were used to reinforce the strong foundation for concepts provided by the commercial industry. Inputs provided from interviews were informal and subject to biases which will be discussed in the analysis section. They serve merely to establish the fact that these concepts are worthy of further investigation that extends beyond the bounds of this project.

4.0 Analysis

Analysis in this research project focused on providing direct benefits to the Civil Engineer Squadron. Benefits were subjectively considered as anything offering improvement in areas such as efficiency, effectiveness, cost, value creation, quality, retention and intellectual capital. Ideally, the concepts targeted are

intended to influence the entire system rather than having an isolated impact on one specific area (Figure 5). By devoting time and energy into these focus points there is greater potential for a broad impact to provide benefits. Focus points were

Figure 5: Focus Point

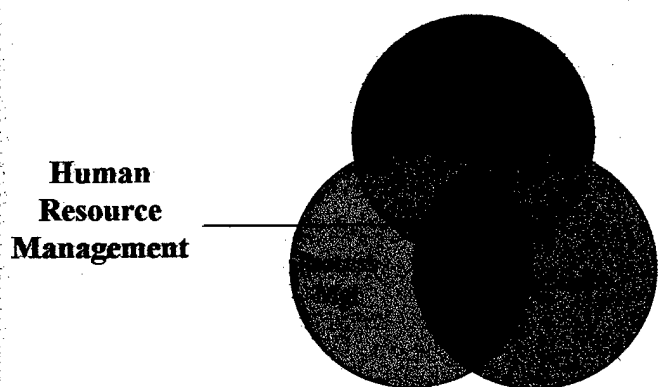


generated through a comparison of the CE organization with the National Quality Award (Appendix B). This revealed several areas with direct application to the squadron level while implementation could be established at any point within the hierarchy.

Within each of the 'criteria for performance excellence' outlined in the Malcolm Baldrige Award there are a multitude of potential focus points for improvement. The goal is to transform the descriptive nature of these items into prescriptive recommendations for future action. Appendix C illustrates how the concepts were narrowed for this project. Although there are many opportunities that could be harnessed, it is only possible to address a few in this paper. For this reason, the areas offering the greatest potential benefits were subjectively selected based upon available research and experience with the organization.

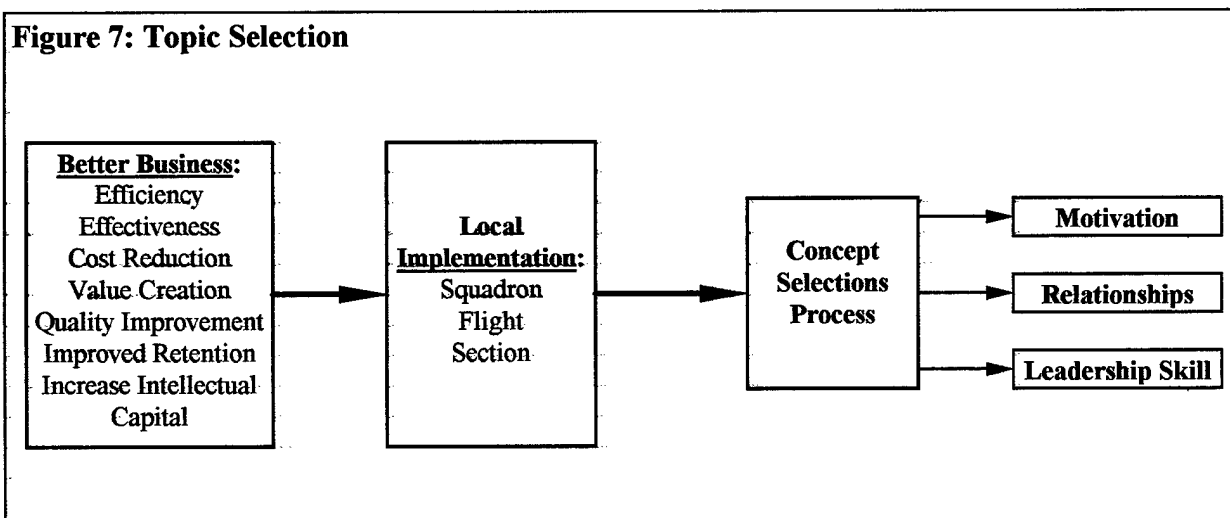
The focus remains on finding methods that allow the CE Commander to leverage resources without requiring outside assistance. It is the goal of this project to provide commanders with something that will directly impact their

Figure 6: Impact on the System



ability to optimize the system within their own organization (Figure 6). Based upon the narrow specifications laid out and the analysis with the Malcolm Baldrige National Quality Award Criteria, one area presented the opportunities that were desired. By focusing on areas within Human Resource Management it is possible to leverage a broad base that may benefit all other criteria in the National Quality Award. Although all of the criteria are vital to performance excellence, the effort must begin somewhere in the organization. Given the limited resources and time constraints due to the operations tempo it is extremely important to start with one aspect initially. It is quite possible that proper implementation of initiatives in this area could free additional resources and time in order to pursue other areas.

Figure 7: Topic Selection



As seen in Figure 7, the subject matter was refined over the course of several steps to establish a clear and distinctive focus. The selection was tainted in part by my personal background as a Civil Engineering officer as well as by my interest in Dr. Deming's psychology aspect within the System of Profound Knowledge. The selected concepts primarily involve motivation and relationships in the context of human resource management. For implementation purposes the focus point of this project will target leadership development within the officer rank. Due to the fact that typical CE squadrons consists of approximately four percent officers (around 10 for every 250 personnel), this provides a controlled and very defined starting point as a strong foundation for this research.

4.1 Analysis Technique

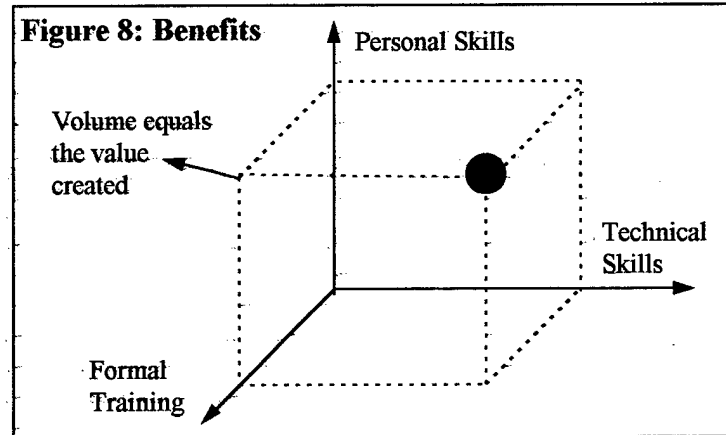
Due to the size of the organization and the scope of implementation, it is only possible to establish initial concepts for future improvements. Careful study of human resources in the Air Force shows signs of a carefully designed system. Unfortunately, the actual implementation as compared to the National Quality Award is poor. To reinforce this, a small survey was taken of Civil Engineer officers of various ranks (Two 1st Lieutenants, five Captains, two Majors and two Lt Colonels). The intent of the survey was to compare how well the organization taught and reinforced the very qualities demanded and judged for promotion.

With an understanding of the system and its flaws it is possible to chart a means of improvement. This concept is based upon the Malcolm Baldrige Award's goal to promote the "understanding of the requirements for performance excellence and competitive improvement"

- (1). Academic research will then be used to bridge the gap between current practices and future excellence. Concepts will be analyzed based upon survey inputs from participants.

4.1.1 Key Measures

The premise underlying the analysis in this project is depicted in Figure 8. The volume of the cube is an illustration of the value within the Air Force's leadership development system. Volume is dictated in part by each of the



three dimensions. Although the current system focuses on two areas, there is a lack of value due to the neglect of personal skills. To expand this dimension, the areas shown in Figure 7 must be improved.

The improvement of motivation, relationships and leadership skills are not designed to be definitive predictors of future success for an organization. They are supposed to define target points within human resource development. With proper analysis the selected principles will evolve into an action plan that will have long term and somewhat intangible impacts on overall business. They are also initial indicators that demonstrate the value of further research in this area (Figure 8). Using available research it is the intent of this project to use these measures to help develop the body of knowledge on the Civil Engineer Squadron and use that knowledge to define future improvements.

4.1.2 Biases

Several biases played a major role in the direction and results of this study. My personal knowledge of the subject matter along with mental models created a particular slant towards the topics of human resource management and improved productivity. These personal experiences along with academic knowledge directly influenced the direction taken in interviews and surveys.

In particular, as a junior officer I had little ability to change the system. This created a strong desire to research concepts that could be applied at any level with emphasis from the squadron level on down.

The survey accompanying this project (Appendix E) was designed as a tool to aid research but was not intended to provide definitive direction. Overall, it gathered information to help form a foundation and a better working knowledge of the system. It was not designed according to formal guidelines nor was it rigorously tested. As a result, it introduced definite bias into the study and cannot be used as statistically reliable in supporting claims. The mere purpose of including it in the research was to confirm the potential for expanded research and pilot studies in the future.

Some of the new concepts presented are in their initial formation or early implementation in the commercial industry. As a result, a majority of the information on these subjects was positive and provided only supporting evidence of their value. Added to this, the area of human resource management has many intangible aspects which are difficult to measure and compare. The benefits occur over the long term and require continuous implementation of concepts before any benefits can be measured. These qualities have always been difficult for organizations to consider in the American culture and create difficulty in analyzing their true value.

4.1.3 Scoring

The possibilities of expanded study in this research area are enormous. This study, however, offers only a quick insight of theories as they directly apply to Air Force Civil Engineering. Full blown research would have properly considered demographics such as education, job experience, leadership positions, and professional development. Added to this, a significant sample size would be required to provide statistical reliability and remove bias.

To be more manageable, this study used basic questions drawing upon the personal experiences of officers. A small sample size was selected from Air Force Civil Engineers that could be readily contacted in person or by e-mail. Sources included officers at the University of Colorado, Grand Forks AFB and Peterson AFB. The survey consisted of three primary sections for scoring purposes. The first consisted of assessing how formalized training (PME) addressed several management and leadership aspects. Secondly, the participants were asked to rate several factors as they pertain to the various officer ranks. The survey concluded with a series of questions used to determine the value of several new concepts.

The subjectivity of this research made the method of scoring each participant a very important part of the survey. A Likert Scale was used in order to capture a range of responses to each question. The scale was defined in a set range to create definite answers which could be easily compared. The range in all three sections went from 1 to 10 with each rating being defined in the following manner: 1 - no impact, 5 to 6 moderate impact, 10 significant impact. These scores were then tallied, averaged and correlated with other available information to expand the body of knowledge.

4.2 Concepts for Improved Motivation

The purpose of exploring human resources and leadership was to establish a means of conducting better business in the Air Force. Due to the abstract nature of these concepts it is very difficult to directly measure the benefits. In order to improve mission performance, the area of motivation was investigated as a potential leverage point. The objective was to go beyond merely compensating individuals for performance (extrinsic) and to tap into establishing a deeper connection (intrinsic) with the employee. This objective hinges upon the theory that people perform better when they enjoy what they do and are passionate about the role they play within

the organization. The next several sections analyze the individual concepts that were selected for this study.

Each of the areas to follow address principles that are key to establishing a new focus on human resources and leadership. The analysis includes a discussion of survey results, academic support, applicability to the CE Squadron, potential benefits, a means of application and limitations. The concepts presented here will then be used to establish a new body of knowledge. A breakdown of survey results is shown in the table located in Appendix F.

4.2.1 Intrinsic Motivation

Intrinsic motivation is a general concept that is perhaps more of a result than a particular initiative to be undertaken. It involves the internal desire of an individual to accomplish something without regard to an external reward, whether it be a monetary bonus or recognition. By establishing this type of drive in the employee, the organization removes itself from the reinforcing nature of having to offer continual enticements to spur productivity. Added to this, the development of intrinsic motivation impacts more than just the targeted area of production. In full bloom, this concept leads to a process of continuous learning over the long term.

In the survey two questions targeted current training and its impact in this area at various points in the officer's career. The average scores based on the 10 point scale can be seen below in Figure 9 based on initial officer training, squadron officer school, and air command and staff

Figure 9: Impact of Training

		Initial	SOS	Air Command
#6	How did this training prepare you to understand and deal with the personal drives and needs of individual subordinates?	5.4	5.57	4.0
#7	To what extent did it prepare you to motivate subordinates on a personal level without the use of rank?	5.5	5.86	2.67

college. The marks were generated by averaging the individual participant's responses. Question

six attained a score of 5 for both initial and intermediate (SOS) training. Advanced training at Air Command and Staff College received a score of 4. This places all training programs in the moderate range with regard to how they impacted the officer's understanding of intrinsic motivation. Question seven attempted to assess the difference between formal education and implementation. For both the initial and intermediate training results fell into the moderate range, scoring comparable to question six. However, Air Command and Staff College received much lower marks (2.67).

Each of these figures demonstrates the substantial room available for improvement in the area of intrinsic motivation. This conclusion is based upon the fact that the mean score fell short of the upper limit on the Likert scale that extended to a score of 10. The synthesis section will integrate these problems with the findings in other areas in order to devise a holistic corrective action.

4.2.2 Self-Determination

Our country was founded on the principles of self-determination with statements such as "the pursuit of happiness" and "the land of opportunity." Most individuals value the ability to control their own destiny in some way. Therefore, it is important to take this into consideration within the Air Force. Although the stereotype of the military depicts personnel to be nearly robotic in the performance of duties, the system still consists of individuals. One factor that separates the Air Force from the other services is that it sends its officers out to fight in million dollar aircraft rather than charging the enemy with thousands of 'grunts.' This fact established an attitude long ago in the other services of the "kinder, gentler Air Force" due to the easier lifestyle and higher quality of life.

Manuel London regards personal choices as increasing intrinsic motivation, as per his article entitled “Empowered Self-Development and Continuous Learning” (5). The survey conducted for this project indicates that participants also hold this self-determination in high regards (Figure 10). Two questions (numbers 12 and 13) referenced this concept and their

Figure 10: Self-Determination Questions

#12	8.27	How important is choosing your own destiny in PCSs, job positions, and TDYs?
#13	7.64	How important is it for you to have freedom in choosing how to accomplish a task?

average scores were 8.27 and 7.64 respectively. Based upon the established 10 point Likert scale this is a moderate to high response with regard to the concepts being assessed.

However, it should be noted that in question #12 that there was one outlying response. Apart from one response of ‘2’ all the other answers ranged from 8 to 10, a significantly narrower range. This one particular factor could amplify the importance of this concept. Additionally, in question #13 a similar outlying response was received from the same survey participant. Outside of this one mark at ‘2,’ the other responses ranged from 6 to 10. Again, this could have adversely affected the results of the survey. Nonetheless, the relatively high averages still help to substantiate the importance of this concept.

Self-determination may be applied on a vast spectrum. At the lowest levels, personnel may be left to work on projects on an outcome basis. Rather than specifying how they are to accomplish the task, personnel may be left to do things as they wish so long as the outcome achieves the desired end. It should be noted, however, that many regulations and laws do place limitations on how Civil Engineers do their job. It is up to the leader to provide a range of freedom around these guidelines so that subordinates have some control.

There are numerous potential benefits available when this concept is properly implemented. This increased independence will provide subordinates with the chance to pursue activities with new freedom. Self-determination can promote creativity and innovative ideas in problem solving. It places trust in the individual's competencies to get the job done as well as instilling personal pride.

Due to the military mission there are limits in implementing the concept of self-determination. Often the specific mission requirements demand that personnel follow orders immediately and completely. The Air Force has significantly more freedom than the other services because the majority of operations occur well behind the battle front. On a day to day basis care must be taken to avoid placing too much power in subordinates who do not have the necessary skills or abilities. It is often appropriate to hand down vast responsibility in order to develop personnel, yet it is important to keep a watchful eye so that the job gets done correctly and on time. The concept of self-determination must be appropriately blended with other corrective actions to improve the system of leadership development.

4.2.3 Shared Vision

Shared vision is a concept whereby individuals want to be a part of something larger than themselves. It is an emotional response often connected with a strong feeling of pride. For Civil Engineers in the Air Force, the shared vision is the ability to deploy as a unit and establish a camp in a contingency environment. These situations are typically called Prime BEEF for 'base engineering and emergency force.' In peacetime, the abilities of these personnel allow them to provide for themselves and take care of the unit which instills a great deal of pride. A leader must learn how to tap into this pool of emotion on a daily basis in order to leverage the higher

productivity. Skill and proficiency are one thing, but it takes this element to motivate people to extreme levels of productivity.

The survey results provided some insight into this area (Figure 11). Two questions were asked in an attempt to draw out possible conclusions. The first question (#14) related specifically to how the individual related to the squadron mission. The average score yielded a 5.91 out of a possible 10 indicating only a moderate association. The second question (#15) addressed the connection to the shared vision at the Air Force level that transcends the objective of individual squadrons. Overall, the group of participants responded a bit more favorably to this with an

Figure 11: Shared Vision Questions

#14	5.91	How does the shared vision of the Prime BEEF mission play in your desire to stay in?
#15	6.55	What impact does the vital role of the Air Force play in your desire to remain active?

average score of 6.55. Survey participants came from a broad background of assignment locations which provided the variety needed to assess this concept. This score could possibly indicate that shared vision is not a strong leverage point.

Shared vision is a concept that may be drawn down into the smallest sections of the squadron. It can be invested in sports, activities or specific goals that are unique to a section of people. As an example, during a deployment to Bahrain in 1998 the 347th Civil Engineer Squadron had a group of fanatical plumbers. Although their job was a dirty one, this very fact distinguished them from all other personnel. The section



chief was actually dubbed 'CP' for combat plumber and wore an equipment belt with a plunger at all times.

The benefits from harnessing a shared vision are limitless. It hinges upon the leader's ability to tap into the emotions of subordinates and to generate constant support. By using the internal motivation of subordinates there will be an improvement in productivity. However, shared vision must be used carefully. It is possible to alienate some personnel if the vision is very exclusive. This alienation can reduce communications in the workplace and generate tension between sections which depend on the exchange of workflow to complete mission requirements.

4.2.4 Fulfillment

Once a person's basic needs are met, the factors for motivation become highly variable (Cohen 184). For some, the reward for work is money and they will continue to move from one job to the next in the pursuit of larger salaries. Recent academic research has validated that for many others this monetary reward has its limits (Ettorre 8). There comes a point when the physical needs of the individual are fulfilled and intrinsic rewards become a driving factor.

As discussed earlier, the salary in the Air Force is not the greatest, but many of the benefits, such as medical coverage and education, have a strong allure. For those who stay, the deciding factor is often the sense of fulfillment which they obtain from their jobs in the military. One means of assessing fulfillment is to compare pay between the competitive market and the military (20/20 Telecast). Further supporting this are the survey results shown in Figure 12 which show fulfillment to be an important part of the job.

Initial questions (#8 and #9) were directed at assessing how pay and benefits impacted the serviceman's desire to stay in the military. Although benefits rated from low (3.45 out of 10) to

Figure 12: Fulfillment Questions

Question - Rate on a scale of 1 to 10	2nd Lt	1st Lt	Captain	Major	LtCol
#8 To what degree did the amount of your paycheck impact your desire to stay in the military at each paygrade?	2.36	2.45	3.44	5.0	4.5
#9 How did the available benefits impact this desire? (medical, retirement, education, leave...)	3.45	3.64	4.67	5.25	5.5

#16	7.82	What role does job satisfaction play in your choice to remain in or leave the service?
#17	7.55	How important is a sense of fulfillment from your job in opting to stay in the military?

moderate (5.5) with respect to the spectrum of rank, we find that military pay consistently scored lower in each case (2.36 to 5). Despite this, it would appear that the level of pay met the basic needs of personnel such that they were able to focus on other aspects in the needs hierarchy.

Two additional questions staged later in the survey directly addressed the issue on fulfillment (#16 and #17). Question #16 pertained to job satisfaction while question #17 asked about overall fulfillment. Using the Likert scale as a means of comparison, the higher values for fulfillment seem to indicate that this concept compensates for some of the lags in monetary compensation and benefits. Scores for questions 16 and 17 averaged at 7.82 and 7.55, registering in the moderate to high range. Due to the significant difference found, it may be concluded that properly trained officers can use fulfillment as a potential leverage point for meeting mission requirements.

In its implementation, fulfillment is highly variable due to its application to individual personnel. Much of this concept can be achieved by investing responsibility in subordinates. However, the specific tasks will be dictated by personal interests, needs and desires. This is not to

say that every task must conform to the person's wishes, but an appropriate balance should be achieved. If this concept is applied excessively it may cause important work to be left undone. Implementation is ultimately limited by mission requirements and the varying demands of peacetime and conflict situations. Specific forms of implementation will be discussed in the synthesis section.

4.2.5 Suggestions Provided By Participants

The survey concluded with an open ended question allowing freeform comments. Participant 5 provided input based on the current training provided by the Air Force. Although much of the training brings significant personal improvement, the following statement was made: "I think 90% of my officership skills are based on personal experiences either good or bad, and by watching others succeed or fail." This shows, to some extent, that formal training is lacking in providing the skills necessary in the working environment. On the other hand, this could reinforce the fact that it is difficult to reenact reality in a classroom environment.

4.3 Concepts for Improved Relationships

Relationships are a part of daily life and they exist everywhere from our personal lives to the workplace. Relationships involve the interactions between individuals, other personnel and situations. If the systems approach is applied, interactions in one area can both directly and indirectly impact the performance in others. Deming recognized this fact when he discussed psychology as part of his Profound System of Knowledge. It is a complex system with many interacting parts. By teaching and practicing the various parts it is possible to use this knowledge to improve performance.

Three questions in the survey were designed to draw out the need for improved relationship training in the professional development programs (Figure 13). The first question

targeted the impact that training had on the individual's ability to facilitate relationships. Based on the composite score at each level of training (5.4, 5.57, and 4.0) on the ten point scale, there is a good indication that this training is lacking. Later in the survey questions were asked as to the importance of technical skills (#10) versus personal skills (#11). The response for personal skills varied with regard to the various officer ranks as seen in Figure 13. However, they were consistently higher than the scores for technical skills. Coupled with the results from question #6, this may indicate a gap between what is needed and what is taught. It should be noted that personal skills are at least as important as technical ability which is demonstrated by comparing the survey results for both areas. This corresponds to evidence presented by academic sources (Fisher 293). These results will be reinforced as each new concept is addressed.

Figure 13: Leadership Skills

		Initial	SOS	ACSC
#6	How did this training prepare you to understand and deal with the personal drives and needs of individual subordinates?	5.4	5.57	4.0

		2 st Lt	1 nd Lt	Captain	Major	LtCol
#10	How important are technical skills in effective leadership at each rank?	6.36	6.45	7.22	5.5	6.0
#11	How important are personal skills in effective leadership at each of these ranks?	7.27	7.82	8.56	8.0	7.5

4.3.1 Emotional Connection

One of the primary differences between managers and leaders is the emotional bond that they develop with their subordinates. The predominance of managing versus leading, however, depends upon the situation and may change several times throughout the day. Nonetheless, the importance of leadership in the military plays a vital role in order to leverage human resources. This is particularly important due to the variable workflow experienced by civil engineers. Although statistics may not support it, circumstances always seem to dictate broken water mains

late on Friday afternoons and deployment taskings right before major holidays. It takes more than a good manager to keep these circumstances from damaging overall productivity.

Keeping the distinction between a manager and a leader in mind, the survey was designed to quantify some of the areas involved with developing strong relationships. Initial questions assessed the practical value of training in developing abilities to establish emotional bonds with personnel. Once again, the 10 point Likert scale applies to these questions. The average scores for question #6 and #7, displayed in Figure 14a, indicate that the officers participating in the

Figure 14a: Emotional Connection Questions

		Initial	SOS	Air Command
#6	How did this training prepare you to understand and deal with the personal drives and needs of individual subordinates?	5.4	5.57	4.0
#7	To what extent did it prepare you to motivate subordinates on a personal level without the use of rank?	5.5	5.86	2.67

#11	How important are personal skills in effective leadership at each of these ranks?	7.27	7.82	8.56	8.0	7.5
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survey did not feel that this training had a significant impact. Yet, when later asked about the importance of these ‘personal skills’ in question #11, the average score ranged much higher based upon the various ranks.

Later in the series of questions, two additional assessments were made of how these emotional connections factored into employee retention (#21 and #22 in Figure 14b). Scores in these areas were moderately high with values of 6.64 and 7.45. Three other questions targeted relationship factors. Questions 18 through 20 scored 6.82, 7.91 and 6.82 respectively. This demonstrates that participants felt that areas outside of work were relatively important in building emotional bonds.

Figure 14b:

#21	6.64	How does the sense of family in the squadron impact the decision to stay in?
#22	7.45	To what degree does the personality and personal interaction of squadron leadership impact this?

#18	6.82	To what degree has leadership encouraged your pursuit of personal aspirations?
#19	7.91	How important is it for leaders to know what their subordinates want out of life?
#20	6.82	To what extent does this off-duty focus impact job performance?

As results indicate, this area is considered to be important to personnel. Unfortunately, the general indication is that officers do not feel adequately prepared by current training in the Air Force. Improved training in this area could turn effective managers into effective leaders. Considering the hierarchical structure, the lowest officer grade of 2nd Lieutenant outranks 90% of Air Force personnel. As such, these untrained leaders directly impact results in a large part of the force structure. Although in Civil Engineer Squadrons the 2nd Lieutenants are typically placed in technical positions without subordinates, they rise to power quickly with miscellaneous projects, job advancements and promotions.

Great leaders attract people that will 'follow them to the ends of the earth.' The potential benefits of this are enormous. On the quantifiable side there is productivity, efficiency and a reduction in sick days. The intangible aspects can have a broad impact that goes beyond the squadron. Locally, leaders can harmonize interactions between sections, stimulate creativity and innovation, extend goals and objectives, and promote affiliations and camaraderie within the squadron. Beyond the organization, leadership skills help to smooth relationships with other squadrons in order to fulfill mission requirements and improve quality of life for civil engineers. For example, good relations with the Services Squadron (responsible for billeting, food, and morale) and the Communications Squadron (responsible for phones and e-mail) pay enormous dividends when the unit deploys. I learned this from personal experience after spending four months in Bahrain while working with personnel from Moody Air Force Base.

Leadership qualities that build emotional ties may be implemented on a broad spectrum within the military. The most common technique includes empathizing with subordinates when the leader places his or herself in the same boat with the troops. Emotional connections may be created in many different ways from the soft-hearted to hard-core leader. Because of the specific characteristics inherent to the military, a careful balance must be attained. Although the various military services pose problems for implementation, the Air Force has the greatest potential for broad use. Despite this opportunity, the acceptability of the soft-hearted approach will be limited due to the rigors and demands of the mission. Although this may make people feel better about circumstances, they often just need a swift kick with a boot to propel them through the situation. On the opposite extreme, the effectiveness of a purely hard-core approach with a relentless drive and no regard for the personnel is limited. Individual leaders will find their comfort zone somewhere within this spectrum. By modifying the current training structure it may be possible to speed up and improve the leadership development of officers in Civil Engineer Squadrons.

4.3.2 Defensive Behaviors

An ability to deal with defensive behaviors is important because it can prevent problems before they occur. For leaders, this involves a conscious ability to navigate difficult waters in personal conversations. Words must be considered carefully when weighing how to discuss issues. Every time that feedback is provided to a subordinate it must be specifically tailored based on the individual's needs and values. The same sentence for instance could mean two completely different things to two different people. Each individual has defensive buttons that could be pushed depending upon how the leader conducts himself. Any of these buttons could trigger defensive behaviors.

Survey results from three questions in this study provided inputs into this concept (Figure 15). A direct impact on survey results may be attributed to college curriculum, type of training and personal experience of each participant. Despite the range of answers provided, the average response indicated a high importance for understanding defensive behavior (7.73 out of 10). Added to this, current training was assessed at only being moderately effective (5.27) in

Figure 15: Defensive Behavior Questions

#23	7.73	How important is it to avoid defensive behaviors caused by offending someone or being confrontational when discussing a need for improvement?
#24	5.27	How effective was professional development in teaching you how to deal with this?
#25	5.73	How effective was the 'live and learn' method in teaching you how to handle defensive behavior?

facilitating understanding. Of interest is the result for question #25 regarding the 'live and learn' method of experience. The average response of 5.73 shows that participants in the survey only feel that this is moderately effective. Perhaps it is the unconscious nature of this concept that prevents further refinement without formalized training. This fact would explain why both learning methods rated only moderate while the requirement for understanding defensive behaviors scored high.

This concept is of particular value to any leader. Provided with a firm understanding it may be used to avoid confrontations and to provide meaningful feedback that will be used to change behavior. At times, however, the military will demand direct confrontation. In these situations there is often no way of avoiding defensive behaviors. Instances like these arise in violation of military regulations demanding compliance where issues are black and white. Additionally, there will be times when personnel exercise poor judgment and need to be punished. Despite these occasions a firm knowledge of defensive behaviors will promote good communication and improve productivity.

As the survey demonstrates there is room for improvement with regards to this concept. The large range of responses within the questions may indicate that more attention is required in assuring that the officer training curriculum is consistent across the full spectrum of commissioning sources. The low responses for both formal training as well as that of 'live and learn' show a need for more formalized training in this area. A firm understanding of the concept prior to engaging in conversations will provide the leader with better opportunities for building strong relationships with subordinates.

4.3.3 Mental Models

Mental models are a personal framework used for analyzing situations and interactions. They are present at the subconscious level and impact our conscious decision making and judgments. Some of the common mental models for officers are addressed in a table format. Although often unspoken they remain as a reference point that impact actions.

Figure 16: Common Officer Mental Models

<u>Mental Model</u>	<u>Reality</u>
Young airmen spend their time and money partying every chance they get.	Many airmen, although 18 to 20 years old, have families to support.
Young airmen should be as devoted to their jobs as the officers are.	Many airmen have to work second jobs in order to put food on the table.
All personnel entered the Air Force because they believe in the vital mission.	Recruiters entice people to enlist with college education opportunities.
Some career fields, like fire-fighters, don't have to work unless the need arises.	Although fires rarely occur, the amount of training and maintenance requirements keep personnel fully employed.

Mental models are a difficult concept to handle unless taught by a knowledgeable facilitator. In the survey, a question asked respondents what they thought the impact of mental models was in daily duties (Figure 17). Scores indicated a higher than moderate impact on the 10 point scale with a 6.82. Reflecting upon this result, the assessment could have been tainted by the

actual consciousness that each participant has with regard to his or her own mental models.

Without formal training as a baseline for responses, this question is difficult to fully assess.

Figure 17: Mental Model Questions

#26	6.82	What impact do mental models (the way you perceive interactions to take place) play in your daily duties?
#27	4.0	How effective was professional development in teaching you accurate mental models?
#28	6.5	What impact did the 'live and learn' method have in correcting your mental models in the performance of daily duties?

On the other hand, question #28 about 'live and learn' received noticeably higher marks than formal training (6.5 versus 4.0). This supports the opportunity for improved training to help leaders in this area. Formal training can provide an officer with a stronger foundation. A firm understanding of prevalent mental models will improve judgment and positively impact decision making abilities. From the perspective of other personnel, this will allow the officer to act more equitably and have a better understanding of variation in the work force. It is important to continuously update mental models with new information for better accuracy.

The value of this concept may be best assessed by how companies in the competitive environment view it. There are several organizations with well established leadership laboratories for the development of their executives. Upper management personnel are sent away from their daily duties to participate in these programs for a set period of time. At these sites, they are placed into situations with well trained facilitators who provide direction. The environment serves as a means to reveal aspects of the executive's personality and subconscious while simultaneously providing an opportunity to change both conscious and subconscious actions.

Much like defensive behaviors the concept of mental models will require more formalized training for the Air Force. Many of the same models exist within broad bands of our society and are created from social status and upbringing. Many more, however, exist on a personal level.

Compounding this problem is the fact that multiple models can interact. As a result, each individual will react to a situation differently. Training that considers these aspects is vital to truly opening up and breaking the bad mental models held by leaders. One way to customize the program is to use formalized survey questionnaires which have statistical relevance. As a tool, these can be designed to assess individuals while opening their eyes to some of the mental models that they hold.

To reinforce regular education and surveys it is possible to establish workshops with facilitators to practice these concepts. In this environment individuals can role play a situation and receive immediate and direct feedback about their actions. Although mental models act subconsciously, this workshop can help to reveal factors that the person is not aware of at a conscious level. As these concepts are addressed, the person may adapt the models to better reflect reality. Initiatives such as these can lead to improved leadership ability.

4.3.4 Informal Communication

Informal communication places an emphasis on the leader being able to sit down and carry on an open discussion with others. Several factors impact this including the leader's personality, conversational skills and knowledge. In the Air Force there are two separate tracks: the enlisted, with specific vocational skills, and the officer, with technical and managerial skill. This dichotomy facilitates command and control, yet it also causes a rift in the force structure. This rift is bridged by the informal communication that develops emotional ties with subordinates.

Of particular interest to overcoming this gap is the officer's ability to empathize with personnel (Figure 18). Survey results show the importance of informal communications with an average score of 8.27 (question #29). Despite this importance, the average participant felt that initial officer training had relatively no impact (2.91 for question #30) on their ability to understand the rigors of the enlisted workforce. Question #31 reveals that professional development played a moderate role improving communications. The 'live and learn' method

Figure 18: Communication Questions

#29	8.27	How important are the informal communications in the workplace?
#30	2.91	At the beginning of your career, how well were you able to relate and communicate with enlisted personnel about their PFE and Skills tests for promotion as well as their PME?
#31	4.73	How did professional development impact this understanding and ability to discuss it?
#32	6.82	What role did the 'live and learn' method have in developing this ability to communicate with subordinates?

(question #32) received fairly high marks (6.82 out of 10), possibly amplified by the lack of education during initial officer training.

Informal relationships require a means of comparison in order to develop common ties between individuals. The two separate tracks in the military create a communication barrier. Although there are many comparable aspects between the rigors of enlisted training and those experienced by officers this rift remains due to the lack of training. Without a formal understanding of the enlisted evaluation system the officer will not be able to relate to 90% of the manpower in the Air Force. This lack of knowledge can reduce one's ability to empathize and result in a loss of respect. Because this system overlays the entire structure of the Air Force it bears direct influence on civil engineers.

Mere classroom education could suffice in preparing officers appropriately to improve informal communications. For the most part, the officers face comparable rigors as they go

through college and officer training. These experiences mesh with the requirements of skill tests and professional knowledge exams mandated for the enlisted ranks. By understanding these requirements the officer can comprehend the basis for enlisted promotion and empathize with the trials they must endure. Injecting this into informal relationships allows them to provide encouragement and support the needs and desires of subordinates, thus improving their leadership skills.

4.3.5 Coaching

The concept of coaching provides an interesting analogy for military leadership. On one hand, it involves being demanding and forceful to get the most out of a team. On the other hand, it involves providing the encouragement and motivation that build emotional ties within the team. In this environment the coach is much more than just a manager directing training and calling plays. He or she has an emotional stake with the players. There are many parallels that offer insight into what qualities must be sought and developed in our leaders.

Figure 19: Coaching Questions

#33	6.09	Have leaders ever coached you on how to work more effectively or lead better?
#34	8.55	How important is it for leaders to coach and counsel the people under them to inspire development?

Turning to the survey once again there were two direct questions referring to this concept (Figure 19). The first question (#33) attempted to assess the level of coaching conducted by current leadership. This was intended to capture aspects from coaching and mentorship to the frequency of feedback. The average response of 6.09 on the 10 point scale shows signs that this is being moderately applied in the work force. At the same time however, respondents placed a

much higher value on the importance of coaching with a value of 8.55. This discrepancy shows the potential for improvement in officer development.

Coaching requires the ability to frequently witness and communicate about actions. The applicability to Civil Engineer Squadrons is somewhat dependent upon the base location. Some units have a majority of their sections collocated which allows more frequent interaction between personnel. Other units have geographical separations that could range from being across the street to the other side of the base. Even a short distance significantly reduces the level of communication and interaction.

In its current state, coaching is a leadership quality exercised independently by many officers. There is no formal means mandated by the Air Force to facilitate this concept. It should be noted, however, that some units do employ their own techniques that model this behavior either consciously or unconsciously. For instance, Moody AFB Civil Engineers implemented a program whereby new officers were provided with a sponsor that arranged introductory activities with sections throughout the squadron. This interaction served to educate the young officers and provide mentorship in answering questions and providing guidance over the long term. Beyond this, it is fairly common place for the senior enlisted members to take young officers under their wing and to provide guidance.

Although informally used in many instances, it is possible to create some consistency as indicated above. Rather than leaving the new officer to live through a 'trial by fire,' the coaching method provides expert advice. The coach has the option to allow the young officer to live and learn while providing feedback. Additionally, as roadblocks are encountered the encouragement to continue is readily provided to maintain motivation. It is possible for the subject to learn and

have positive memories of the experiences. In the end, the coach has the ability to rapidly improve the new officer while leaving a lasting impression.

This principle may be widely applied up the entire officer chain. Due to the varying levels of responsibility, each step requires additional learning. As a result, it is possible for the 1st Lieutenant to coach the 2nd Lieutenants, for the Captains to coach the 1st Lieutenant and for the Majors to coach the Captains and so forth. Each level requires different skills and abilities ranging from one-on-one relations to dealing with hundreds of personnel. As officers are promoted it is important to learn from those in the above ranks. Once initiated, the aspect of coaching can become second nature to the organization and may lead to a cycle of continuous learning and refinement.

4.3.6 Suggestions Provided by Participants

Most participants opted not to provide free format input allowed in the suggestion section of the survey. The majority, as expected, simply rated each question and returned the questionnaire. As with other forms of feedback, it is feasible to assume that for every comment there are several others with comparable feelings. This generalization may be practically applied and adds value to the survey administered for this research project.

One of the respondents took it upon himself to extensively address the subject at hand. Whereas most suggestions would be complete in only a few sentences, this individual went to impressive lengths in a one page, single spaced essay to address concerns from his four years of experience. In summary, his commentary revolved around the lack of qualifications to become a leader outside of having a college degree and the completion of officer training. The severity of the situation is highlighted by an acknowledgment that enlisted personnel look upon this lack of ability with "tolerance" and "humored and/or cautious reservation". The recommendations

provided in this essay involve an increase in leadership training as well as practical application and practicing of skills in deputy leadership roles under the wing of a supervisor. This is a surprisingly close match to the analysis and synthesis conducted in this project.

4.4 Synthesis - Improving the System

The key concepts involved in developing good leaders have always been a part of the informal system overlying the structured training in the Air Force. Recognition of the fundamental principles has been given in the form of professional military education. However, this has been ineffective in actively growing the leaders that the armed forces need. The current system establishes a covert learning style (trial by fire) and needs to apply more overt and intentional methods. This is demonstrated within the survey results which show the focus of training to be on managerial qualities rather than leadership.

There are two schools of thought on leadership. One claims that individuals are born with the unique leadership qualities while the other acknowledges that these qualities may be learned and developed. The corrective action plan to be established by this project targets the second school of thought. Under this plan the Plan-Do-Study-Act (PDSA) loop will be accelerated in order to add value as portrayed to the right. The ideology behind this is comparable to compounding money daily instead of annually. At first the benefits will only seem negligible but the payoff is enormous over the long term.



To shorten the PDSA loop a new system will be introduced to formalize these concepts and solidify them in training and development curriculums. This new system must provide a theory of knowledge for leaders, allow them to test it with experience, and ensure that they are

able to learn (Deming). This may be done by exposing the mental models of young leaders, developing their personal mastery and providing the opportunity for continual application to refine their abilities.

4.4.1 Improved Leadership Development

With regard to the leadership system there are three primary parts of the puzzle that may be linked in different ways as depicted in Figure 20. There is the subordinate who is an individual with specific needs and desires. Then there is the leader that needs to have the qualities and characteristics to get other

people to “do what they don’t want to do and like it” (George Patton). Finally, there is the situation that impacts the interaction between the two.

Figure 20: Parts of the System

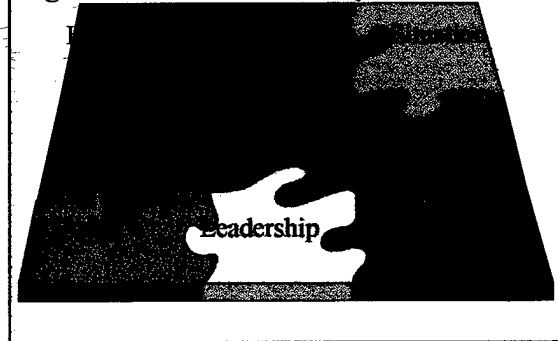
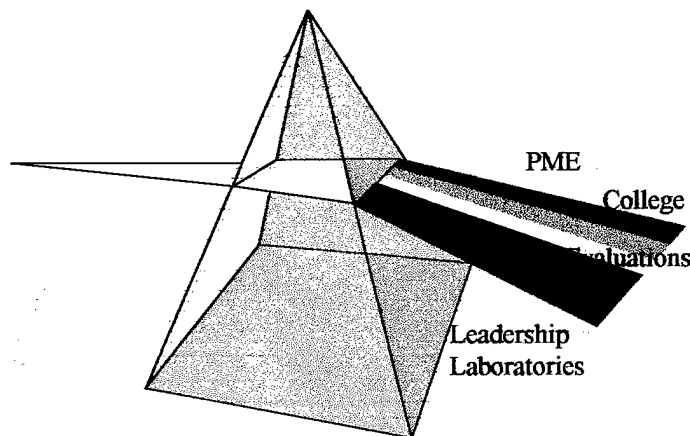


Figure 21: Breakdown of Leadership Development



of formalized training will include professional development, college education, outside inputs and self-learning (Figure 21). Professional development will serve as significant milestones in military training. College education at both the bachelors and masters level will provide a broad base

of knowledge that adds different perspectives to the leader’s point of view. In order to take an active role in growing leadership abilities, a formal process will be established for self-learning and

outside inputs at the local level. Rather than using a six month feedback and annual performance report, the officer will be put into a continuous loop that offers daily to weekly feedback and opportunities to make changes while seeing quick results. The objective is to facilitate the rapid development and reinforcement of concepts in the officer's mind in a conscious manner.

There is no easy way to correct the problems identified in the Air Force officer development program. It will require significant change, allocation of resources and a long term focus of unwavering support in order to succeed. Although this project is targeted for local implementation, several of the suggested improvements will be best accomplished at higher levels within the hierarchy. In the mean time, the focus will remain on how to establish changes at the squadron level in order to develop good leaders. To illustrate the new system, a PDSA model will be used to organize changes in a logical structure.

In the planning phase it is important to understand the baseline for each individual with regards to their interpersonal skills as discussed in conjunction with Figure 9. For this purpose the concept of emotional quotient (EQ) is an excellent starting point. This concept is well developed (Fisher 293) and tests may be created specifically for the Air Force. For local implementation it is possible to access sample tests over the internet. Testing the individual at the beginning of the cycle provides an early assessment. It may be used to customize an individual training program that focuses on any weak areas identified. Added to this, it can become a method of measurement to track improvement over time. Currently the Air Force simply pushes all candidates through a standard training curriculum and assumes that the end product fulfills a minimum standard with no method for measurement.

Emotional quotient plays a vital role in the entire cycle. As discussed earlier in the background section it is possible to improve EQ scores over time. Unfortunately, the method of

individual testing is only valid for the initial assessment. Daniel Goleman establishes that proper assessment of an individual requires inputs from those in positions above, below and parallel to the person (Goleman 167). In this regard, 360 degree feedback becomes a necessary step in the evaluation process. The current system only evaluates the individual from the supervisors viewpoint. By introducing feedback from all of the other interactions, it is possible to create a

better perspective of leadership
 assess initial ability, it is also a
 period of implementation. The
 will dictate what areas need



ability. Although EQ will be used to
 means to study results following a
 inputs provided from other personnel
 more work. Based on this it will be

possible to select training and workshops to promote more effective leadership development to improve the current scores in the moderate range (Figure 9).

To provide self-determination as addressed in Figure 10 there are several options available to the squadron. Although daily work responsibilities may help to fulfill this concept, the organization can take an active role in development. At every base there are numerous activities that occur each year which require special project officers for completion. Typical taskings include the Combined Federal Campaign, Savings Bond Drive, consultant visits, special design projects, and military exercises on the base. A formal project assignment system could help to distribute these extra projects evenly while providing excellent learning opportunities for young officers. As illustrated in Figure 10 the high average response shows this to be a very important area. To meet the requirements of self-determination, it is important to allow the individual to steer the project as he or she sees fit.

This system alone is not sufficient to solve the current problems. Completing the PDSA Loop is vital to development. It is important for supervisors to keep an eye on job performance.

Additionally, the individual should be encouraged to talk with peers who have comparable experiences and lessons learned. If the project is long term, formal assessments should be conducted monthly. This period allows ample time for the individual to plan and conduct actions. With the help of the supervisor it will be possible to study and act on the feedback provided. Any period longer than a month typically obscures facts and blurs the comparison of results.

The original intent of the research was to expand the intrinsic motivators with the concept of shared vision. Counter to my initial assumption, however, the survey scores in Figure 11 showed this as being only a moderate leverage point (5.91 and 6.55). As a result, it may not generate the benefits desired from early changes in the system. After proper implementation of other concepts there may be sufficient time and energy remaining to later focus efforts in this area. Until then, shared vision should be kept in mind for partial inclusion within other areas.

The final area addressing intrinsic motivators targeted the level of fulfillment experienced by the individual. The results for this area received high marks (7.82 and 7.55) as shown in Figure 12. This offers much more leverage than the extrinsic motivators assessed by the survey (also shown in Figure 12). In order to achieve improvement, the job environment must be adapted to provide for the young officer. This is not to say that every task will be enjoyable. A careful balance must be struck between mission requirements and the tasks that provide a sense of fulfillment. In this regard, the use of EQ, assessment tests, and frequent/open contact with supervisors will establish a conscious awareness of the necessary steps to take. For some, fulfillment will come from taking charge of large groups while for others fulfillment will be found in guiding a small technical team. This concept should not be limited to the work environment either. Certain flexibility must be provided to allow individuals to pursue outside goals such as furthering education, participation in sports and religious activities.

As with the other areas, the PDSA Loop must be employed to avoid problems. The level of fulfillment experienced by someone depends on the work environment which changes from day to day. Frequent reassessments of the situation and individual will keep things in balance. It is possible to alter feelings about the work place just by providing other opportunities for the officer. Tuning into this aspect is an improvement over the existing system of filling manpower positions and randomly assigning additional duties. Coupled together, self-determination and fulfillment are powerful factors in creating productive employees and can be manipulated to facilitate the development of strong leaders.

The area of intrinsic motivation is focused specifically on the individual. It is necessary to expand upon this to provide a well rounded leader. For this reason the area of improved relationships was targeted based upon Deming's aspect of psychology. The survey assessed some of the current conditions as well as the need for improvement in specific areas. In particular, Figure 13 demonstrated the value of technical and personal skills. Although both are important, the average for personal skills rated consistently higher at each rank. This figure also shows that current training is only moderately effective at helping officers to manage personal relationships. Five concepts were looked at in an effort to develop better leaders.

Emotional connection is one of the strongest aspects to developing relationships. This is validated by the high marks noted in Figure 14a. As with the other 'soft science' concepts there are many ways to implement improvements in this area. One way for the young officer to build rapport with others is through spending time with them. To this end, junior officers should spend time with other sections in the squadron. A few possible examples of implementing this include: Overnight shifts at the fire department, pouring concrete with the heavy repair section, fixing pipe with the plumbers, conducting facility visits with the maintenance unit or attending site visits and

inspections with the engineering flight. Each of these activities are both educational and relationship building within the squadron. Developing these bonds is the first step to establishing emotional ties.

Outside of work it is important for the officer to be involved with squadron activities. This target area is derived from the results in Figure 14b. Typically there are many base leagues for sports throughout the year. Also, each squadron normally has a pet project that is conducted annually. Involvement in these areas allows the officer to work along side other personnel without rank being involved. These activities build relationships and strengthen emotional ties.

Referring again to the PDSA Loop, it is important that feedback be provided in a timely format such that actions and results can be quickly correlated. The benefit of the ongoing PDSA cycle is that development may be tracked to show progression over time. Involvement of the supervisor is necessary to direct actions in specific areas and to ensure growth of leadership skills. As the young officer learns and practices it will become second nature to him or her.

Although 'soft science' concepts are difficult to manage, the areas of defensive behaviors and mental models pose added difficulty due to their subconscious nature (Figures 15 and 17). This may be conquered using several techniques. The first option is formal training. The Air Force normally creates concentrated cram classes that immerse personnel for several days in a topic matter. Upon completion, participants are given certificates so that they will never have to take the course again. Due to the nature of defensive behaviors, this format is not very effective for training. The survey results demonstrate signs of this ambiguity possibly due to the subconscious nature of this aspect.

Instead, training should be conducted on an ongoing basis which provides classroom instruction with the opportunity for implementation and future feedback. This cycle is necessary

for repetition as well as the opportunity to draw a more conscious awareness of this concept. Cram courses could be broken down to half-day classes once a quarter to create a learning loop. More value could be added to this with role playing as a means of practice and demonstration. Several leadership laboratories have been created in private industry with these very concepts in mind. These actions could improve current officer development and elevate the current scores illustrated in Figure 15.

Outside of this classroom education it is essential for the supervisor to give feedback after observing any situation exhibiting defensive behaviors on the part of the young officer or others. Feedback may be provided in a relaxed and informal manner as frequently as desired. As a minimum, however, discussions should occur at least monthly in order to easily review situations, events and interactions that have occurred recently. Again, the acceleration of the PDSA loop in this manner creates the ability to learn about the concept, practice it, and provide feedback to change behavior. This provides the opportunity for improvement before behavior patterns establish a rut that is difficult to get change.

Along the same line of defensive behaviors is the aspect of mental models (Figure 17). The subconscious nature of this area requires many of the same corrective actions just discussed. Frequently reoccurring training can provide solid reinforcement of education and techniques. Additionally, role playing allows the officer to practice within a controlled environment prior to actual circumstances. Despite this, it may be difficult to identify all of the mental models held by an individual. For this reason it is vital to provide the officer with the knowledge of how to identify and change them.

Once these tools are added to the repertoire, it is important to use them so that they do not become dull. To this end it is necessary to provide the officer with a wide background of

experience early in the career. Time spent with other sections within the unit provide input that can update and change perceptions. As an example, spending the night at the fire department quickly reveals the rigors not seen by many others. Even time spent with other units is extremely valuable to changing mental models. A lack of understanding can often create frustration and anger during inter-organizational jobs. To solve this it is necessary for the individual to break out of their mental model to see how the system really works. These changes have the potential to significantly improve the moderate scores shown in Figure 17.

As with each of the other areas it is important to create a continuous loop of learning. With proper coordination the supervisor can ensure that the young officer spends some time in different areas to view the system from different angles. By sitting down and discussing these visits while interjecting additional view points, it is possible to mold personnel. A good leader is one that can overcome harmful mental models and optimize every portion of the system that they work within.

Many of the techniques presented thus far have benefits for informal communication as well. The assignment of special projects demands interaction between individuals and establishes formal relationships. Additionally, time spent with other sections and units helps the individual to network and establish points of contact. This may then be developed further outside of work by participating in sports leagues, squadron picnics and annual community projects. All of these situations provide the opportunity for individuals to interact and build knowledge of one another as well as trust.

To help bridge the gap between the officer and enlisted ranks some training must be provided. As earlier results indicate in Figure 18 there is a substantial shortfall of formal education on the enlisted promotion system. This system defines the career path for 90% of the

manpower. At some point early in the officer's career an overview of the enlisted system must be provided. During this training the officer's experiences should be directly correlated to the demands of the enlisted evaluation system for promotion. A thorough knowledge mixed with sympathetic comparisons creates a leader that is more in-tune with subordinates. With this simple initiative, the new officer development program can improve the scores shown in Figure 18.

The final area of discussion is the inclusion of the coaching concept within the rigid hierarchical structure of the Air Force. Survey results indicate a moderate level (6.09 out of 10) of coaching occurring in the Air Force with a much higher need (8.55 out of 10) for this concept in the workplace. Coaching is perhaps the strongest analogy possible for demonstrating the responsibility required to develop strong leaders within the system. Young officers cannot be left to mature on their own with only classroom guidance provided. They need someone who is there every step of the way providing guidance and encouragement. This concept has value throughout the entire rank structure and should not be limited. Just as different sports have different coaches, the officer may need different coaches for different tasks. In many instances it may be an experienced enlisted person who steers the officer. In this environment, feedback is continuously provided and the PDSA loop is very active. The coach helps to call the play while the individual executes the tasks. Afterwards a post game analysis can be done in order to improve the game.

The opportunities for improving leadership development are not limited to the areas discussed thus far. This research project was designed to identify some of the shortcomings of the current system while recommending several high leverage points to infuse rapid improvement. In summary, the two largest flaws of the current system are a disregard of actual leadership qualities in lieu of management abilities and a weak PDSA loop for continuous improvement.

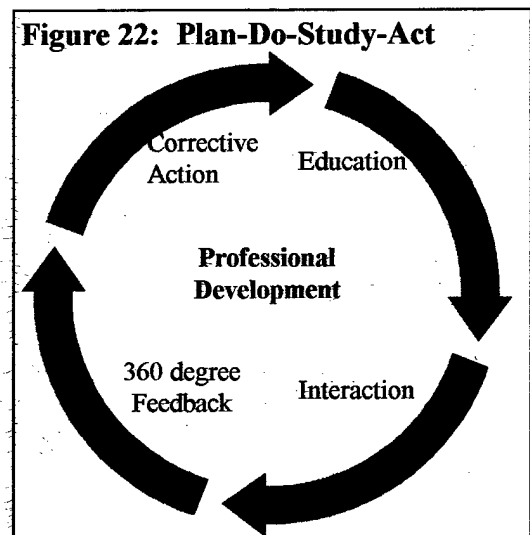
By supporting areas other than the development of management skills it is possible to expand the intrinsic motivation in Civil Engineers. With this new system in place the individuals will be taught other skills with focus on recurring education and professional development. Implemented properly, these areas can lead to self-learning individuals who add value to the organization. Using feedback from outside sources completes the PDSA loop and provides information necessary to improve the process as seen in Figure 22. In order to have effective leaders for tomorrow, Civil Engineers must invest time and energy into individuals today to make them grow into the shoes they are required to fill.

Referring to the current evaluation system, feedback is provided at the 6 month and 1 year point. At each of these stages the supervisor must agonize over what has occurred during those 180 days to provide inputs into the evaluation system. By accelerating the PDSA loop, the number of evaluations is dramatically increased, however, the cumulative time spent on evaluation will be less because inputs will be readily

apparent over the shorter cycle. An added benefit to this is that evaluation will no longer be an afterthought. Accelerating the system with a formalized feedback loop will set the stage for continuous learning. After a few growing pains the new system will just be a lifestyle, making Civil Engineering one step closer to being a learning organization.

4.4.2 Benefits

When dealing with 'soft science' concepts, it is always difficult to measure the benefits. No direct correlation can be drawn to how these concepts impact profitability and business



efficiency. Despite this, many academic researchers proclaim the success of conducting better business by leveraging these areas. Supporting their claims are the numerous companies applying these philosophies in a competitive market to improve their market positions.

For the Air Force, the bottom line on the balance sheet does not have the same importance. The benefits for this organization will not necessarily be measured in dollar terms. The most important issues at hand are personnel retention, learning orientation, and intellectual capital. Military pay has always lagged that of civilian counterparts (20/20 Telecast). Benefits such as medical coverage, vacation time and unique job fields have played a substantial role in keeping manpower levels strong. However, the Air Force has fallen into tough times and is facing shortages in the lower ranks which will lead to shortfalls of leaders in the upper ranks in just a few years (AF Times). To bridge the disparity between military job benefits and those of the corporate world, a focus on personal fulfillment may be the answer. Rather than competing with extrinsic rewards it may be possible to harness the intrinsic factors of fulfillment to retain personnel.

As with competitive organizations, the concept of intellectual capital is important in Civil Engineer Squadrons. Due to the high turnover of personnel, information is always being lost and recreated. Although the civilian backbone is in place, the impact of job changes, moves and personnel leaving the military is significant. With a new leadership development system in place there will be significant benefits to the corporate intellectual capital. Retention is one of the key issues. By improving this area, individuals will remain with the organization and thus some capital will be retained. As leaders focus more on the soft sciences, additional capital will be developed through increased productivity. Added to this, the increasing focus on intrinsic motivation will help to establish a learning orientation.

A learning orientation involves a continuous cycle of improvement. Although it is possible to develop a structured format and feedback system in the organization, it is important to establish this within each individual. This new system, although a structure by itself, allows the individual to 'learn how to learn'. It establishes and reinforces a way of life that will benefit the organization. By continuously developing bodies of knowledge and testing them there will be on-going contributions to intellectual capital. It is this step that can make Air Force Civil Engineering into a learning organization.

4.4.3 Summary of Improvements

Several recommendations for improvement were generated from the research and analysis in this project. Three primary areas for leverage were identified in the Air Force leadership development system. These areas, along with action items, are summarized in Figure 23. The first area is the current feedback loop which only requires formal evaluations twice each year by the direct supervisor of the employee (corresponding AF Forms are located in Appendix D). This is the focus point that offers the quickest return on invested time and energy. As shown in the figure, significant improvement can be made with only a few actions implemented at the squadron level. These actions are intended to generate more feedback, with increased frequency, in the formative years of the young officer. To reuse an earlier illustration, this is comparable to increasing the compounding period of interest.

Figure 23: Summary of Improvements

Areas of Improvement	Actions Items
Improved PDSA Loop	Increase feedback sessions to monthly evaluations
	More discussion with supervisor about interaction and relationships
	360 degree feedback to provide perspective from other relationships
	Coaching by knowledgeable individuals dependent upon the activity
Increased Focus on Emotional Connection	Use a test of Emotional Quotient (EQ) as a baseline and customize training program for each individual

	Formal assignment of special projects demanding interaction which allow independent action (self-determination)
	Allow flexibility in the work environment for employee to select an area of personal fulfillment (special project, education, church...)
	Organize activities with other sections within the squadron
Education and Training	Breakdown professional military education into smaller, more frequent sessions to provide continual learning
	Provide training about the enlisted evaluation system and correlation to the rigors of officer training
	Add an overall focus on interpersonal skills related to EQ
	Establish role playing environments to reveal defensive behaviors and mental models
	Create leadership laboratories with expert facilitators
	Mandate graduate education to provide a broad base of knowledge

The second area to improve leadership development is an increased focus on emotional connections in the workplace. This is potentially the most difficult area to formalize in the new system. Current programs target the development of technical and management skills which leave the young officers ill-prepared to interact with subordinates. Although changes at the Air Force level would provide the best results, the leadership at the squadron level can compensate for the current system by implementing the action items in the table.

The last area for improvement pertains to education and training which is much more tangible. The recommendations in this area are designed to establish continual learning while developing the interpersonal skills necessary for great leadership. More focus should be applied to providing quarterly piecemeal training which allows the officer to implement and practice concepts in a manageable way. Additional opportunities for improvement are available with expanded training and education shown in Figure 23. For immediate improvement in leadership development, it is vital for squadron leaders to take charges of the situation. Implementing these actions will require some creativity and persistence before the long term benefits will become

evident. Those within Civil Engineer Squadrons who take this challenge will begin a movement that will permanently change leadership development in the Air Force.

5.0 Conclusions

Several conclusions may be drawn from the research presented in this project. First, the values of good leadership demand emotional ties with employees. This has been established by academic sources and is reflected by the brief survey associated with this project. Second, the current development system in the Air Force primarily teaches management as demonstrated by officer training curriculums and evaluation systems. The third conclusion that may be drawn is that the time period between professional military education courses induces stagnation and prevents continuous learning from occurring.

With this understanding of the flaws in the system, it was possible to develop corrective actions that may be implemented to improve business results. The basic principles of the new leadership development system hinge upon shortening the PDSA cycle and teaching psychological aspects to young officers. The introduction of psychological values will establish the emotional development that distinguishes managers from leaders. Additionally, the shortened PDSA cycle will change the current system of consolidated, formalized education. The new system demands an on-going process that allows officers to consciously build a body of knowledge, test it over a foreseeable time and to adapt their actions and mental models to a better personal mastery of leadership.

Although this research targeted concepts that could be applied by individuals, it has the potential for much greater ramifications. Implementation of the action items listed in Figure 23 can occur on almost any level. For the most part, these concepts may be applied up the Air Force chain without the need for extensive change. Outside of this organization, however, the

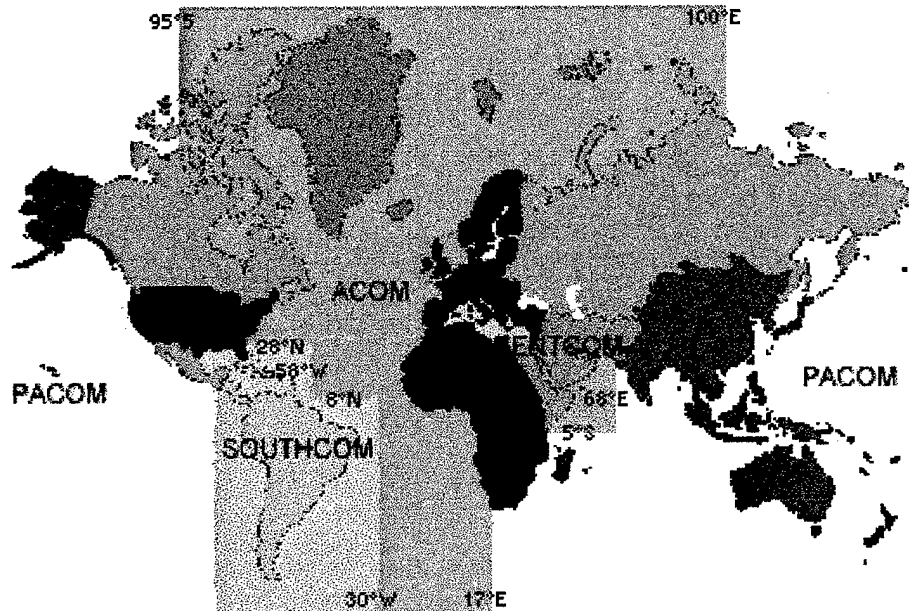
implementation may vary even though the underlying principles remain the same. The benefits of improving the Plan-Do-Study-Act cycle and providing training in psychological aspects bear universal applicability on leveraging leadership for conducting better business.

Figure 24: Concept Deployment



APPENDICES

Appendix A: Areas of Responsibilities (AORs)



Appendix B: Applicability Analysis

Each area was ranked based on the ability of implementation and control at each level. Applicability of the Criteria to the item is also weighted into the rank.

Strong - direct input and ability to leverage resources towards goal

Moderate - direct input and some ability to leverage resources towards goal

Negligible - some input and very little ability to leverage resources towards goal

Squadron Level - Actual execution of tasks.

Base Level - Prioritization of directives and supports efforts.

Air Force Level - Determines manpower and funding levels as well as critical programs.

<u>Malcolm Baldrige Criteria</u>	<u>Squadron Level</u>	<u>Base Level</u>	<u>Air Force Level</u>
1.1 Leadership System	Strong	Strong	Strong
1.2 Company Responsibility and Citizenship	Strong	Strong	Strong
2.1 Strategy Development Process	Negligible	Moderate	Strong
2.2 Company Strategy	Negligible	Moderate	Strong
3.1 Customer and Market Focus	Strong	Moderate	Moderate
3.2 Customer Satisfaction & Relationship Enhancement	Strong	Moderate	Negligible
4.1 Selection and Use of Information and Data	Negligible to Moderate	None to Negligible	Moderate
4.2 Selection and Use of Comparative Information and Data	Moderate	Negligible	Strong
4.3 Analysis and Review of Company Performance	Strong	Negligible	Moderate
5.1 Work Systems	Moderate	Negligible	Strong
5.2 Employee Education, Training and Development	Strong	Negligible	Moderate
5.3 Employee Well-Being and Satisfaction	Strong	Negligible	Negligible
6.1 Management of Product and Service Processes	Strong	Moderate	Moderate
6.2 Management of Support Processes	Moderate	Moderate	Negligible
6.3 Management of Supplier and Partnering Processes	Moderate	Negligible	Negligible
7.1 Customer Satisfaction Results	Strong	Moderate	Negligible
7.2 Financial and Market Results	Moderate	Moderate	Negligible
7.3 Human Resources Results	Strong	Moderate	Negligible
7.4 Supplier and Partner Results	Moderate	Negligible	Negligible
7.5 Company-Specific Results	Strong	Moderate	Moderate

Appendix C: Concept Selection

<u>Concept</u>	<u>Retention</u>	<u>Intellectual Capital</u>	<u>TOTAL</u>
Extrinsic Motivation	+	+	2
Fulfillment	++	++	4
Emotional Connection	++	++	4
Self-Determination	++	+	3
Education	+	++	3
Professional Development	+	++	3
Defensive Behavior		+	1
Self-Concept		+	1
Mental Models		+	1
Retention		++	2
Communication		++	2
Relationships	++	++	4
Coaching / Counseling	++	++	4
Intrinsic Motivation	+	++	3
Shared Vision	++	++	4
Emotional Quotient	+	+	2
360 degree Feedback		+	1
Leadership	+	++	3

***Post project note:** After completing this project I found that many of the 'soft science' concepts blur together and are interdependent. Originally, this table helped to define areas of focus. In the end, all of the subjects played some role in the project although the intent was to establish clear and concise differences.

Appendix D: Evaluations and Awards

Referencing Section 2.4

AF Form 707A - Field Grade Officer Performance Report
AF Form 707B - Company Grade Officer Performance Report
AF Form 724A - Field Grade Officer Performance Feedback Worksheet
AF Form 724B - Company Grade Officer Performance Feedback Worksheet
AF Form 910 - Enlisted Performance Report
AF Form 911 - Senior Enlisted Performance Report
AF Form 931 - Performance Feedback Worksheet (AB thru TSgt)
AF Form 932 - Performance Feedback Worksheet (MSgt thru CMSgt)
AF Form 1206 - Nomination for Awards

FIELD GRADE OFFICER PERFORMANCE REPORT

I. RATEE IDENTIFICATION DATA *(Read AFI 36-2402 carefully before filling in any item)*

1. NAME <i>(Last, First, Middle Initial)</i>	2. SSN	3. GRADE	4. DAFSC
5. PERIOD OF REPORT From: Thru:		6. NO. DAYS SUPERVISION	7. REASON FOR REPORT
8. ORGANIZATION, COMMAND, LOCATION			9. PAS CODE

II. UNIT MISSION DESCRIPTION

III. JOB DESCRIPTION

1. DUTY TITLE:
2. KEY DUTIES, TASKS, AND RESPONSIBILITIES:

IV. IMPACT ON MISSION ACCOMPLISHMENT

V. PERFORMANCE FACTORS

DOES NOT
MEET STANDARDS

MEETS
STANDARDS

1. Job Knowledge Has knowledge required to perform duties effectively. Strives to improve knowledge. Applies knowledge to handle nonroutine situations.	☐	☐
2. Leadership Skills Sets and enforces standards. Motivates subordinates. Works well with others. Fosters teamwork. Displays initiative. Self-confident. Has respect and confidence of subordinates. Fair and consistent in evaluation of subordinates.	☐	☐
3. Professional Qualities Exhibits loyalty, discipline, dedication, integrity, honesty, and officership. Adheres to Air Force standards. Accepts personal responsibility. Is fair and objective.	☐	☐
4. Organizational Skills Plans, coordinates, schedules, and uses resources effectively. Schedules work for self and others equitably and effectively. Anticipates and solves problems. Meets suspenses.	☐	☐
5. Judgement and Decisions Makes timely and accurate decisions. Emphasizes logic in decision making. Retains composure in stressful situations. Recognizes opportunities and acts to take advantage of them.	☐	☐
6. Communication Skills Listens, speaks, and writes effectively.	☐	☐

VI. RATER OVERALL ASSESSMENT			
Last performance feedback was accomplished on: _____ (consistent with the direction in AFI 36-2402.) (If not accomplished, state the reason)			
NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION		DUTY TITLE	
		DATE	
		SSN	
		SIGNATURE	
VII. ADDITIONAL RATER OVERALL ASSESSMENT		CONCUR	
		NONCONCUR	
NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION		DUTY TITLE	
		DATE	
		SSN	
		SIGNATURE	
VIII. REVIEWER		CONCUR	
		NONCONCUR	
NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION		DUTY TITLE	
		DATE	
		SSN	
		SIGNATURE	
Instructions All: Recommendations must be based on performance and the potential based on that performance. Promotion recommendations are prohibited. Do not comment on completion of or enrollment in PME, advanced education, previous or anticipated promotion recommendations on AF Form 709, OER indorsement levels, family activities, marital status, race, sex, ethnic origin, age, or religion. Rater: Focus your evaluation in Section IV on what the officer did, how well he or she did it and how the officer contributed to mission accomplishment. Write in concise "bullet" format. Your comments in Section VI may include recommendations for augmentation or assignment. Additional Rater: Carefully review the rater's evaluation to ensure it is accurate, unbiased and uninflated. If you disagree, you may ask the rater to review his or her evaluation. You may not direct a change in the evaluation. If you still disagree with the rater, mark "NON-CONCUR" and explain. You may include recommendations for augmentation or assignment. Reviewer: Carefully review the rater's and additional rater's ratings and comments. If their evaluations are accurate, unbiased and uninflated, mark the form "CONCUR" and sign the form. If you disagree with previous evaluators, you may ask them to review their evaluations. You may not direct them to change their appraisals. If you still disagree with the additional rater, mark "NONCONCUR" and explain in Section VIII. Do not use "NONCONCUR" simply to provide comments on the report.			
IX. ACQUISITION EXAMINER/AIR FORCE ADVISOR (Indicate applicable review by marking the appropriate box(es).)		ACQUISITION EXAMINER (If applicable)	
		AIR FORCE ADVISOR (If applicable)	
NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION		SIGNATURE	
		DATE	

COMPANY GRADE OFFICER PERFORMANCE REPORT

I. RATEE IDENTIFICATION DATA *(Read AFI 36-2402 carefully before filling in any item)*

1. NAME <i>(Last, First, Middle Initial)</i>	2. SSN	3. GRADE	4. DAFSC
5. PERIOD OF REPORT From: _____ Thru: _____		6. NO. DAYS SUPERVISION	7. REASON FOR REPORT
8. ORGANIZATION, COMMAND, LOCATION			9. PAS CODE

II. UNIT MISSION DESCRIPTION

III. JOB DESCRIPTION

1. DUTY TITLE:

2. KEY DUTIES, TASKS, AND RESPONSIBILITIES:

IV. IMPACT ON MISSION ACCOMPLISHMENT

V. PERFORMANCE FACTORS

	DOES NOT MEET STANDARDS	MEETS STANDARDS
1. Job Knowledge Has knowledge required to perform duties effectively. Strives to improve knowledge.	☐	☐
2. Leadership Skills Sets and enforces standards. Works well with others. Fosters teamwork. Displays initiative. Self-confident.	☐	☐
3. Professional Qualities Exhibits loyalty, discipline, dedication, integrity, honesty, and officership. Adheres to Air Force standards. Accepts personal responsibility. Is fair and objective.	☐	☐
4. Organizational Skills Demonstrates ability to plan, coordinate, schedule effectively, and uses resources effectively and efficiently. Meets suspenses.	☐	☐
5. Judgement and Decisions Makes timely and accurate decisions. Emphasizes logic in decision making. Retains composure in stressful situations. Recognizes opportunities. Requires minimal supervision.	☐	☐
6. Communication Skills Listens, speaks, and writes effectively.	☐	☐

VI. RATER OVERALL ASSESSMENT

Last performance feedback was accomplished on: _____ (consistent with the direction in AFI 36-2402.)
(If not accomplished, state the reason)

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION

DUTY TITLE

DATE

SSN

SIGNATURE

VII. ADDITIONAL RATER OVERALL ASSESSMENT

CONCUR

NONCONCUR

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION

DUTY TITLE

DATE

SSN

SIGNATURE

VIII. REVIEWER

CONCUR

NONCONCUR

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION

DUTY TITLE

DATE

SSN

SIGNATURE

Instructions

All: Recommendations must be based on performance and the potential based on that performance. Promotion recommendations are prohibited. Do not comment on completion of or enrollment in PME, advanced education, previous or anticipated promotion recommendations on AF Form 709, OER indorsement levels, family activities, marital status, race, sex, ethnic origin, age, or religion.

Rater: Focus your evaluation in Section IV on what the officer did, how well he or she did it and how the officer contributed to mission accomplishment. Write in concise "bullet" format. Your comments in Section VI may include recommendations for augmentation or assignment.

Additional Rater: Carefully review the rater's evaluation to ensure it is accurate, unbiased and uninflated. If you disagree, you may ask the rater to review his or her evaluation. You may not direct a change in the evaluation. If you still disagree with the rater, mark "NON-CONCUR" and explain. You may include recommendations for augmentation or assignment.

Reviewer: Carefully review the rater's and additional rater's ratings and comments. If their evaluations are accurate, unbiased and uninflated, mark the form "CONCUR" and sign the form. If you disagree with previous evaluators, you may ask them to review their evaluations. You may not direct them to change their appraisals. If you still disagree with the additional rater, mark "NONCONCUR" and explain in Section VIII. Do not use "NONCONCUR" simply to provide comments on the report.

IX. ACQUISITION EXAMINER/AIR FORCE ADVISOR*(Indicate applicable review by marking the appropriate box(es).)*

ACQUISITION EXAMINER

(If applicable)

AIR FORCE ADVISOR

(If applicable)

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION

SIGNATURE

DATE

FIELD GRADE OFFICER PERFORMANCE FEEDBACK WORKSHEET			
I. PERSONAL INFORMATION			
NAME		GRADE	UNIT
II. KEY DUTIES, TASKS, AND RESPONSIBILITIES		IV. COMMENTS	
III. PERFORMANCE FEEDBACK			
	<i>needs significant improvement</i>	<i>needs little or no improvement</i>	
1. JOB KNOWLEDGE			
Has knowledge required to perform duties effectively			
Strives to improve knowledge			
Applies knowledge to handle nonroutine situations			
2. LEADERSHIP SKILLS			
Sets and enforces standards			
Motivates subordinates			
Works well with others			
Fosters teamwork			
Displays initiative			
Self-confident			
Has respect and confidence of subordinates			
Fair and consistent in evaluation of subordinates			
3. PROFESSIONAL QUALITIES			
Exhibits loyalty, discipline, dedication, integrity, honesty, officership			
Adheres to Air Force standards			
Accepts personal responsibility			
Is fair and objective			
4. ORGANIZATIONAL SKILLS			
Plans, coordinates, schedules, and uses resources effectively			
Schedules work for self and others equitably and effectively			
Anticipates and solves problems			
Meets suspenses			
5. JUDGEMENT AND DECISIONS			
Makes timely and accurate decisions			
Emphasizes logic in decision making			
Retains composure in stressful situations			
Recognizes opportunities and acts to take advantage of them			
6. COMMUNICATION SKILLS			
Listening			
Speaking			
Writing			

COMPANY GRADE OFFICER PERFORMANCE FEEDBACK WORKSHEET

I. PERSONAL INFORMATION

NAME	GRADE	UNIT
------	-------	------

II. KEY DUTIES, TASKS, AND RESPONSIBILITIES

IV. COMMENTS

III. PERFORMANCE FEEDBACK

	<i>needs significant improvement</i>	<i>needs little or no improvement</i>
--	--	---

1. JOB KNOWLEDGE

Has knowledge required to perform duties effectively	←	→
Strives to improve knowledge	←	→

2. LEADERSHIP SKILLS

Sets and enforces standards	←	→
Works well with others	←	→
Fosters teamwork	←	→
Displays initiative	←	→
Self-confident	←	→

3. PROFESSIONAL QUALITIES

Exhibits loyalty, discipline, dedication, integrity, honesty, and officership	←	→
Adheres to Air Force standards	←	→
Accepts personal responsibility	←	→
Is fair and objective	←	→

4. ORGANIZATIONAL SKILLS

Demonstrates ability to plan	←	→
Coordinates actions	←	→
Schedules effectively	←	→
Uses resources effectively and efficiently	←	→
Meets suspenses	←	→

5. JUDGEMENT AND DECISIONS

Makes timely and accurate decisions	←	→
Emphasizes logic in decision making	←	→
Retains composure in stressful situations	←	→
Recognizes opportunities	←	→
Requires minimal supervision	←	→

6. COMMUNICATION SKILLS

Listening	←	→
Speaking	←	→
Writing	←	→

ENLISTED PERFORMANCE REPORT (AB thru TSGT)

I. RATEE IDENTIFICATION DATA (Read AFI 36-2403 carefully before completing any item)

1. NAME (Last, First, Middle Initial)	2. SSN	3. GRADE	4. DAFSC
5. ORGANIZATION, COMMAND, AND LOCATION			6a. PAS CODE
			6b. SRID
7. PERIOD OF REPORT From: Thru:		8. NO. DAYS SUPERVISION	9. REASON FOR REPORT

II. JOB DESCRIPTION

1. DUTY TITLE
2. KEY DUTIES, TASKS, AND RESPONSIBILITIES

III. EVALUATION OF PERFORMANCE

1. HOW WELL DOES RATEE PERFORM ASSIGNED DUTIES? (Consider quality, quantity, and timeliness of duties performed)			
☐ Inefficient. An unprofessional performer.	☐ Good performer. Performs routine duties satisfactorily.	☐ Excellent performer. Consistently produces high quality work.	☐ The exception. Absolutely superior in all areas.
2. HOW MUCH DOES RATEE KNOW ABOUT PRIMARY DUTIES? (Consider whether ratee has technical expertise and is able to apply the knowledge)			
☐ Does not have the basic knowledge necessary to perform duties.	☐ Has adequate technical knowledge to satisfactorily perform duties.	☐ Extensive knowledge of all primary duties and related positions.	☐ Excels in knowledge of all related positions. Mastered all duties.
3. HOW WELL DOES RATEE COMPLY WITH STANDARDS? (Consider dress and appearance, weight and fitness, customs, and courtesies)			
☐ Fails to meet minimum standards.	☐ Meets Air Force standards.	☐ Sets the example for others to follow.	☐ Exemplifies top military standards.
4. HOW IS RATEE'S CONDUCT ON/OFF DUTY? (Consider financial responsibility, respect for authority, support for organizational activities, and maintenance of government facilities)			
☐ Unacceptable.	☐ Acceptable.	☐ Sets the example for others.	☐ Exemplifies the standard of conduct.
5. HOW WELL DOES RATEE SUPERVISE/LEAD? (Consider how well member sets and enforces standards, displays initiative and self-confidence, provides guidance and feedback, and fosters teamwork)			
☐ Ineffective.	☐ Effective. Obtains satisfactory results.	☐ Highly effective.	☐ Exceptionally effective leader.
6. HOW WELL DOES RATEE COMPLY WITH INDIVIDUAL TRAINING REQUIREMENTS? (Consider upgrade training, professional military education, proficiency/qualification, and contingency)			
☐ Does not comply with minimum training requirements.	☐ Complies with most training requirements.	☐ Complies with all training requirements.	☐ Consistently exceeds all training requirements.
7. HOW WELL DOES RATEE COMMUNICATE WITH OTHERS? (Consider ratee's verbal and written skills)			
☐ Unable to express thoughts clearly. Lacks organization.	☐ Organizes and expresses thoughts satisfactorily.	☐ Consistently able to organize and express ideas clearly and concisely.	☐ Highly skilled writer and communicator.

IV. PROMOTION RECOMMENDATION *(Compare this ratee with others of the same grade and AFS)*

RECOMMENDATION	NOT RECOMMENDED	NOT RECOMMENDED AT THIS TIME	CONSIDER	READY	IMMEDIATE PROMOTION
RATER'S RECOMMENDATION	1	2	3	4	5
INDORSER'S RECOMMENDATION	1	2	3	4	5

V. RATER'S COMMENTS

I certify that in accordance with AFI 36-2403 an initial feedback session was conducted on _____, and a midterm feedback session was conducted on _____. *(If not accomplished, state the reason).*

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION	DUTY TITLE		DATE
	SSN	SIGNATURE	

VI. INDORSER'S COMMENTS

CONCUR

NONCONCUR

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION	DUTY TITLE		DATE
	SSN	SIGNATURE	

INSTRUCTIONS

Reports written by a senior rater or the Chief Master Sergeant of the Air Force (CMSAF) will not be indorsed.

Reports written by colonels or civilians (GM-15 or higher) do not require an indorser; however, indorsement is permitted unless prohibited by the Instruction above.

When the rater's rater is not at least a MSgt or civilian (GS-07 or higher), the indorser is the next official in the rating chain serving in the grade of MSgt or higher, or a civilian in the grade of GS-07 or higher.

When the final evaluator (rater or indorser) is not an Air Force officer or a DAF civilian, an Air Force advisor review is required.

VII. COMMANDER'S REVIEW

CONCUR	NONCONCUR (Attach AF Form 77)	SIGNATURE
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SENIOR ENLISTED PERFORMANCE REPORT (MSGT thru CMSGT)

I. RATEE IDENTIFICATION DATA *(Read AF136-2403 carefully before completing any item)*

1. NAME (Last, First, Middle Initial)	2. SSN	3. GRADE	4. DAFSC
5. ORGANIZATION, COMMAND, AND LOCATION			6a. PAS CODE
			6b. SRID
7. PERIOD OF REPORT From: Thru:		8. NO. DAYS SUPERVISION	9. REASON FOR REPORT

II. JOB DESCRIPTION

1. DUTY TITLE
2. KEY DUTIES, TASKS, AND RESPONSIBILITIES

III. EVALUATION OF PERFORMANCE

1. DUTY PERFORMANCE *(Consider quality, quantity, and timeliness of duties performed)*

☐ Inefficient. An unprofessional performer.	☐ Good performer. Performs routine duties satisfactorily.	☐ Excellent performer. Consistently produces high-quality work.	☐ The exception. Absolutely superior in all areas.
--	--	--	---

2. JOB KNOWLEDGE *(Consider whether ratee has technical expertise and is able to apply the knowledge)*

☐ Lacking. Needs considerable improvement.	☐ Sufficient. Gets job accomplished.	☐ Extensive knowledge of all primary duties and related positions.	☐ Excels in knowledge of all related positions. Mastered all duties.
---	---	---	---

3. LEADERSHIP *(Consider whether ratee motivates peers or subordinates, maintains discipline, sets and enforces standards, evaluates subordinates fairly and consistently, plans and organizes work, and fosters teamwork)*

☐ Ineffective.	☐ Gets satisfactory results.	☐ Highly effective leader.	☐ Exceptionally effective leader.
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4. MANAGERIAL SKILLS *(Consider how well member uses time and resources)*

☐ Ineffective.	☐ Manages resources in a satisfactory manner.	☐ Skillful and competent.	☐ Dynamic, capitalizes on all opportunities.
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5. JUDGEMENT *(Consider how well ratee evaluates situations and reaches logical conclusions)*

☐ Poor.	☐ Sound.	☐ Emphasizes logic and decision making.	☐ Highly respected and skilled.
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6. PROFESSIONAL QUALITIES *(Consider ratee's dedication and preservation of traditional military values - integrity and loyalty)*

☐ Unprofessional, unreliable.	☐ Meets expectations.	☐ Sets an example for others to follow.	☐ Epitomizes the Air Force professional.
--	--	--	---

7. COMMUNICATION SKILLS *(Consider ratee's ability to organize and express ideas)*

☐ Unable to communicate effectively.	☐ Organizes and expresses thoughts satisfactorily.	☐ Organizes and expresses ideas clearly and concisely.	☐ Highly skilled writer and communicator.
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IV. PROMOTION RECOMMENDATION *(Compare this ratee with others of the same grade and AFS. For CMSgts, this is a recommendation for increased responsibilities.)*

RECOMMENDATION	NOT RECOMMENDED	NOT RECOMMENDED AT THIS TIME	CONSIDER	READY	IMMEDIATE PROMOTION
RATER'S RECOMMENDATION	1	2	3	4	5
RATER'S RATER'S RECOMMENDATION	1	2	3	4	5

V. RATER'S COMMENTS

11. REVIEWER'S COMMENTS

I certify that in accordance with AFI 36-2403 an initial feedback session was conducted on _____, and a midterm feedback session was conducted on _____. (If not accomplished, state the reason).

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION	DUTY TITLE		DATE
	SSN	SIGNATURE	

VI. RATER'S COMMENTS	CONCUR	NONCONCUR
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FA. FACTOR STATEMENT COMMENTS	SCORE	REMARKS

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION	DUTY TITLE		DATE
	SSN	SIGNATURE	

VII. INDORSER'S COMMENTS	CONCUR	NONCONCUR
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DATE	DESCRIPTION	AMOUNT	CHECK NO.	BANK
10/1/2023	DEPOSIT	1000.00		CHASE
10/5/2023	PAYROLL	500.00	1001	CHASE
10/10/2023	RENT	200.00	1002	CHASE
10/15/2023	SALES	750.00		CHASE
10/20/2023	UTILITIES	150.00	1003	CHASE
10/25/2023	DEPOSIT	1200.00		CHASE
10/30/2023	PAYROLL	550.00	1004	CHASE
10/31/2023	RENT	220.00	1005	CHASE
11/1/2023	SALES	800.00		CHASE
11/5/2023	UTILITIES	160.00	1006	CHASE
11/10/2023	DEPOSIT	1300.00		CHASE
11/15/2023	PAYROLL	600.00	1007	CHASE
11/20/2023	RENT	240.00	1008	CHASE
11/25/2023	SALES	850.00		CHASE
11/30/2023	UTILITIES	170.00	1009	CHASE
12/1/2023	DEPOSIT	1400.00		CHASE
12/5/2023	PAYROLL	650.00	1010	CHASE
12/10/2023	RENT	260.00	1011	CHASE
12/15/2023	SALES	900.00		CHASE
12/20/2023	UTILITIES	180.00	1012	CHASE
12/25/2023	DEPOSIT	1500.00		CHASE
12/30/2023	PAYROLL	700.00	1013	CHASE
12/31/2023	RENT	280.00	1014	CHASE
1/1/2024	SALES	950.00		CHASE
1/5/2024	UTILITIES	190.00	1015	CHASE
1/10/2024	DEPOSIT	1600.00		CHASE
1/15/2024	PAYROLL	750.00	1016	CHASE
1/20/2024	RENT	300.00	1017	CHASE
1/25/2024	SALES	1000.00		CHASE
1/30/2024	UTILITIES	200.00	1018	CHASE
1/31/2024	DEPOSIT	1700.00		CHASE
2/1/2024	PAYROLL	800.00	1019	CHASE
2/5/2024	RENT	320.00	1020	CHASE
2/10/2024	SALES	1050.00		CHASE
2/15/2024	UTILITIES	210.00	1021	CHASE
2/20/2024	DEPOSIT	1800.00		CHASE
2/25/2024	PAYROLL	850.00	1022	CHASE
2/28/2024	RENT	340.00	1023	CHASE
2/29/2024	SALES	1100.00		CHASE
3/1/2024	UTILITIES	220.00	1024	CHASE
3/5/2024	DEPOSIT	1900.00		CHASE
3/10/2024	PAYROLL	900.00	1025	CHASE
3/15/2024	RENT	360.00	1026	CHASE
3/20/2024	SALES	1150.00		CHASE
3/25/2024	UTILITIES	230.00	1027	CHASE
3/30/2024	DEPOSIT	2000.00		CHASE
3/31/2024	PAYROLL	950.00	1028	CHASE
4/1/2024	RENT	380.00	1029	CHASE
4/5/2024	SALES	1200.00		CHASE
4/10/2024	UTILITIES	240.00	1030	CHASE
4/15/2024	DEPOSIT	2100.00		CHASE
4/20/2024	PAYROLL	1000.00	1031	CHASE
4/25/2024	RENT	400.00	1032	CHASE
4/30/2024	SALES	1250.00		CHASE
5/1/2024	UTILITIES	250.00	1033	CHASE
5/5/2024	DEPOSIT	2200.00		CHASE
5/10/2024	PAYROLL	1050.00	1034	CHASE
5/15/2024	RENT	420.00	1035	CHASE
5/20/2024	SALES	1300.00		CHASE
5/25/2024	UTILITIES	260.00	1036	CHASE
5/30/2024	DEPOSIT	2300.00		CHASE
5/31/2024	PAYROLL	1100.00	1037	CHASE
6/1/2024	RENT	440.00	1038	CHASE
6/5/2024	SALES	1350.00		CHASE
6/10/2024	UTILITIES	270.00	1039	CHASE
6/15/2024	DEPOSIT	2400.00		CHASE
6/20/2024	PAYROLL	1150.00	1040	CHASE
6/25/2024	RENT	460.00	1041	CHASE
6/30/2024	SALES	1400.00		CHASE
7/1/2024	UTILITIES	280.00	1042	CHASE
7/5/2024				

NAME, GRADE, BR OF SVC, ORGN, COMD & LOCATION	DUTY TITLE		DATE
	SSN	SIGNATURE	

VIII. FINAL EVALUATOR'S POSITION		IX. TIME-IN-GRADE ELIGIBLE <i>(N/A for CMSgt or CMSgt selectee)</i>		X. COMMANDER'S REVIEW		
A	SENIOR RATER				CONCUR	
B	SENIOR RATER'S DEPUTY			SIGNATURE		
C	INTERMEDIATE LEVEL		YES			
D	LOWER LEVEL		NO			

PERFORMANCE FEEDBACK WORKSHEET (AB thru TSgt)

I. PERSONAL INFORMATION

NAME

GRADE	
-------	--

UNIT

II. PRIMARY DUTIES	

IV. COMMENTS

III. PERFORMANCE FEEDBACK

*needs
little or no
improvement*

1. PERFORMANCE OF ASSIGNED DUTIES	
Quality of Work	←————→
Quantity of Work	←————→
Timeliness of Work	←————→

2. KNOWLEDGE OF PRIMARY DUTIES	
Technical Expertise	←————→
Knowledge of Related Areas	←————→
Applies Knowledge to Duties	←————→

3. COMPLIANCE WITH STANDARDS	
Dress and Appearance	←————→
Weight	←————→
Fitness	←————→
Customs & Courtesies	←————→

4. CONDUCT/BEHAVIOR ON/OFF DUTY	
Financial Responsibility	←————→
Support for Organizational Activities	←————→
Respect for Authority	←————→
Maintenance of Government Quarters/Facilities	←————→

5. SUPERVISION/LEADERSHIP	
Sets and Enforces Standards	←→
Initiative	←→
Self Confidence	←→
Provides Guidance/Feedback	←→
Fosters Teamwork	←→

6. INDIVIDUAL TRAINING REQUIREMENTS	
Upgrade (OJT/CDC)	←→
Professional Military Education	←→
Proficiency/Qualification	←→
Contingency/Mobility/Other	←→

7. COMMUNICATION SKILLS

Verbal	←————→
Written	←————→

8. ADDITIONAL FACTORS TO CONSIDER (*i.e., Safety, Security, Human Relations*)

	←————→
	←————→
	←————→
	←————→
	←————→

PERFORMANCE FEEDBACK WORKSHEET (MSGT thru CMSGT)			
I. PERSONAL INFORMATION			
NAME	GRADE	UNIT	
II. PRIMARY DUTIES		IV. COMMENTS	
III. PERFORMANCE FEEDBACK			
	needs significant improvement		needs little or no improvement
1. DUTY PERFORMANCE			
Quality of Work			
Quantity of Work			
Timeliness of Work			
2. JOB KNOWLEDGE			
Technical Expertise			
Able to apply to job			
3. LEADERSHIP			
Motivates peers and subordinates			
Maintains discipline			
Sets and enforces standards			
Evaluates			
Plans and organizes work			
Fosters team work			
4. MANAGERIAL SKILLS			
Time			
Resources			
5. JUDGEMENT			
Evaluates situations			
Reaches logical conclusions			
6. PROFESSIONAL QUALITIES			
Dedication and preservation of military values			
Integrity			
Loyalty			
7. COMMUNICATION SKILLS			
Organizes ideas			
Expresses ideas			
8. ADDITIONAL FACTORS (e.g. Safety, Security, Human Relations)			

NOMINATION FOR AWARD

AWARD		CATEGORY	AWARD PERIOD
RANK/NAME OF NOMINEE <i>(Last, First, Middle Initial)</i>			SSN
DAFSC/DUTY TITLE			
MAJCOM	UNIT/OFFICE SYMBOL/STREET ADDRESS		
BASE/STATE/ZIP CODE		TELEPHONE <i>(DSN & Commercial)</i>	
RANK/NAME OF UNIT COMMANDER <i>(Last, First, Middle Initial)</i>			
SPECIFIC ACCOMPLISHMENTS <i>(Use single-spaced, bullet format)</i>			

Appendix E: Survey Questions

NOTE: The purpose of this survey is to generate supporting evidence to improved aspects of leadership training in the Air Force. This assessment relies on your personal experience. All inputs will be anonymously used with absolutely no reference to names in my final project.

Please rate the following areas on a scale of **1 to 10**, with **1 being no impact**, **5 to 6 being moderate**, and **10 being a significant impact**. Only answer the areas that apply to where you are at in your career.

	Question - Rate on a scale of 1 to 10	Initial Officer Training	SOS	Air Command And Staff
1	To what extent did training impact your management skills such as ability to work well with others, foster teamwork, take initiative, and display self-confidence?			
2	What impact did it have on your professional qualities : loyalty, discipline, dedication, integrity, honesty, ability to accept personal responsibility and to be fair and objective?			
3	How did it impact your organization skills for effective and efficient scheduling and use of resources?			
4	To what extent did it improve your judgment and decision making ability with regards to timeliness and accuracy as well as composure in stressful situations?			
5	How did it impact your communication skill of effectively listening, speaking and writing?			
6	How did this training prepare you to understand and deal with the personal drives and needs of individual subordinates?			
7	To what extent did it prepare you to motivate subordinates on a personal level without the use of rank?			

	Question - Rate on a scale of 1 to 10	2nd Lt	1st Lt	Captain	Major	LtCol
8	To what degree did the amount of your paycheck impact your desire to stay in the military at each paygrade?					
9	How did the available benefits impact this desire? (medical, retirement, education, leave...)					
10	How important are technical skills in effective leadership at each rank?					
11	How important are personal skills in effective leadership at each of these ranks?					

	Scale of 1 to 10	<u>Question</u>
12		How important is choosing your own destiny in PCSs, job positions, and TDYs?
13		How important is it for you to have freedom in choosing how to accomplish a task?
14		How does the shared vision of the Prime BEEF mission play in your desire to stay in?
15		What impact does the vital role of the Air Force play in your desire to remain active?
16		What role does job satisfaction play in your choice to remain in or leave the service?
17		How important is a sense of fulfillment from your job in opting to stay in the military?
18		To what degree has leadership encouraged your pursuit of personal aspirations?
19		How important is it for leaders to know what their subordinates want out of life?
20		To what extent does this off-duty focus impact job performance?
21		How does the sense of family in the squadron impact the decision to stay in?
22		To what degree does the personality and personal interaction of squadron leadership impact this?
23		How important is it to avoid defensive behaviors caused by offending someone or being confrontational when discussing a need for improvement?
24		How effective was professional development in teaching you how to deal with this?
25		How effective was the 'live and learn' method in teaching you how to handle defensive behavior?
26		What impact do mental models (the way you perceive interactions to take place) play in your daily duties?
27		How effective was professional development in teaching you accurate mental models?
28		What impact did the 'live and learn' method have in correcting your mental models in the performance of daily duties?
29		How important are the informal communications in the workplace?
30		At the beginning of your career, how well were you able to relate and communicate with enlisted personnel about their PFE and Skills tests for promotion as well as their PME?
31		How did professional development impact this understanding and ability to discuss it?
32		What role did the 'live and learn' method have in developing this ability to communicate with subordinates?
33		Have leaders ever coached you on how to work more effectively or lead better?
34		How important is it for leaders to coach and counsel the people under them to inspire development?

Appendix F: Survey Results

	Value	Sum	#	Low	High	Survey1	Survey2	Survey3	Survey5	Survey6	Survey7	Survey8	Survey8	Survey10	Survey11	Survey12
1	7.50	75	10	6	4	10	6	5	8	8	8	9	10	4	5	7
	7.14	50	7	5	5	10	X	X	5	8	4	X	X	6	X	7
	4.33	13	3	7	1	8	X	X	X	X	X	X	X	8	X	1
2	7.20	72	10	8	2	10	9	3	8	6	9	10	5	6	8	2
	5.43	38	7	6	2	8	X	3	3	7	7	8	X	8	X	2
	4.67	14	3	7	1	8	X	X	X	X	5	X	X	8	X	1
3	7.10	71	10	5	2	10	7	7	10	7	7	9	6	2	9	5
	5.29	37	7	6	2	8	X	3	2	8	7	7	X	6	X	4
	3.67	11	3	6	1	7	X	X	X	X	3	X	X	7	X	1
4	7.20	72	10	6	4	10	4	7	10	5	7	10	7	5	8	7
	5.86	41	7	6	2	8	X	3	2	8	8	7	X	6	X	7
	4.67	14	3	7	1	8	X	X	X	X	5	X	X	8	X	1
5	6.50	65	10	3	5	8	8	7	5	5	8	8	7	5	8	6
	6.00	56	7	5	7	10	X	7	8	8	8	10	X	8	X	7
	4.33	13	3	7	1	8	X	X	X	X	4	X	X	8	X	1
6	5.40	54	10	7	2	9	9	7	3	5	6	7	8	4	6	4
	5.57	39	7	7	3	10	X	3	3	9	6	10	X	5	X	3
	4.00	12	3	5	1	6	X	X	X	X	5	X	X	6	X	1
7	5.50	55	10	7	2	9	8	4	2	6	6	9	5	3	6	6
	5.86	41	7	6	3	9	X	3	6	7	6	9	X	4	X	6
	2.67	8	3	3	1	4	X	X	X	X	3	X	X	4	X	1
8	2.36	26	11	4	1	5	4	3	2	1	5	1	1	2	3	2
	2.45	27	11	4	1	5	4	3	2	1	5	1	1	2	3	2
	3.44	31	9	5	1	6	X	3	4	5	6	1	1	2	4	5
	5.00	20	4	5	2	7	X	X	5	X	7	X	X	2	X	6
	4.50	9	2	5	2	7	X	X	X	X	7	X	X	2	X	X
9	3.45	38	11	7	1	8	4	3	8	1	8	5	1	3	2	2
	3.64	40	11	7	1	8	4	3	7	1	8	8	1	3	2	2
	4.67	42	9	9	1	10	X	3	6	5	8	10	1	3	3	3
	5.25	21	4	5	3	8	X	X	5	X	8	X	X	3	X	5
	5.50	11	2	5	3	8	X	X	X	X	8	X	X	3	X	X
10	6.36	70	11	8	2	10	5	7	8	5	7	10	8	8	4	6
	6.45	71	11	8	2	10	6	7	7	5	7	10	8	8	5	6
	7.22	65	9	4	6	10	X	7	6	7	7	10	8	7	7	6
	5.50	22	4	3	4	7	X	X	5	X	7	X	X	6	X	4
	6.00	12	2	2	5	7	X	X	X	X	7	X	X	5	X	X
11	7.27	80	11	6	4	10	5	7	10	6	7	10	10	4	5	9
	7.82	86	11	4	6	10	6	7	10	6	7	10	10	6	7	9
	8.56	77	9	3	7	10	X	7	10	8	7	10	10	8	8	9
	8.00	24	3	2	7	9	X	X	7	X	7	X	X	8	X	9
	7.50	15	2	1	7	8	X	X	X	X	7	X	X	8	X	X
12	8.27	91	11	8	2	10	10	8	8	8	8	10	10	2	8	9
13	7.64	84	11	8	2	10	7	8	9	8	9	10	10	2	6	8

14	5.91	65	11	9	1	10	4	1	5	6	7	6	10	6	6	7	7
15	5.55	72	11	5	4	9	4	4	8	9	8	7	8	6	8	5	5
16	7.82	86	11	9	1	10	7	1	8	10	8	10	10	7	10	7	8
17	7.55	83	11	8	2	10	6	2	8	9	8	9	10	7	10	6	8
18	6.82	75	11	8	2	10	5	2	5	10	9	8	6	10	9	4	7
19	7.91	87	11	5	5	10	7	7	7	9	8	9	10	10	9	5	6
20	6.82	75	11	7	3	10	8	3	5	9	8	6	9	10	7	4	6
21	5.64	73	11	7	3	10	7	3	8	8	7	7	3	10	9	6	5
22	7.45	82	11	8	2	10	8	2	8	9	7	6	9	10	7	8	8
23	7.73	85	11	7	3	10	7	9	3	10	8	6	10	10	5	10	7
24	5.27	58	11	5	3	8	7	6	3	3	7	5	3	3	7	8	6
25	5.73	63	11	9	1	10	6	5	3	10	8	6	5	1	8	4	7
26	6.82	75	11	8	2	10	5	6	2	9	7	7	9	10	8	8	4
27	4.00	44	11	5	2	7	6	4	2	3	7	5	2	3	5	3	4
28	6.50	65	10	9	1	10	6	6	2	10	8	7	7	1	7	6	7
29	5.27	91	11	4	6	10	7	7	8	9	8	6	10	10	9	9	8
30	2.91	32	11	7	1	8	3	3	2	1	6	5	1	1	8	1	1
31	4.73	52	11	8	1	9	6	4	9	1	7	7	5	1	5	3	4
32	6.82	75	11	7	3	10	7	7	7	10	8	8	3	5	6	7	7
33	6.09	67	11	7	3	10	3	4	5	5	7	8	10	3	9	5	8
34	8.55	94	11	5	5	10	7	8	5	9	8	9	10	10	9	9	9

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Fact Sheet on the HQ USAF Innovation Center

Headquarters for Installations and Logistics - www.il.hg.af.mil

Biography on Mr. Michael A. Aimone, P.E. (Deputy Air Force Civil Engineer)
Fact Sheet on mission of The Office of The Civil Engineer
Institute for Leadership Dynamics - www.leadership-dynamics.com/
Lean Construction Institute - www.leanconstruction.org
National Defense University - www.ndu.edu
Think It, Inc. - www.think-it-inc.com/

Individuals

Hy Brown, professor of construction management at the University of Colorado at Boulder,
interviewed on 11 May 1999.

Dr. Daughton, Director of the Engineering Management Department, served as the project
advisor offering continuous guidance and consulting.

Vince Micucci, retired Colonel, U.S. Air Force, interviewed on 18 May 1999.

Lieutenant Colonel James Mills, Civil Engineer Commander, Peterson AFB, Colorado,
interviewed on 21 May 1999.

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