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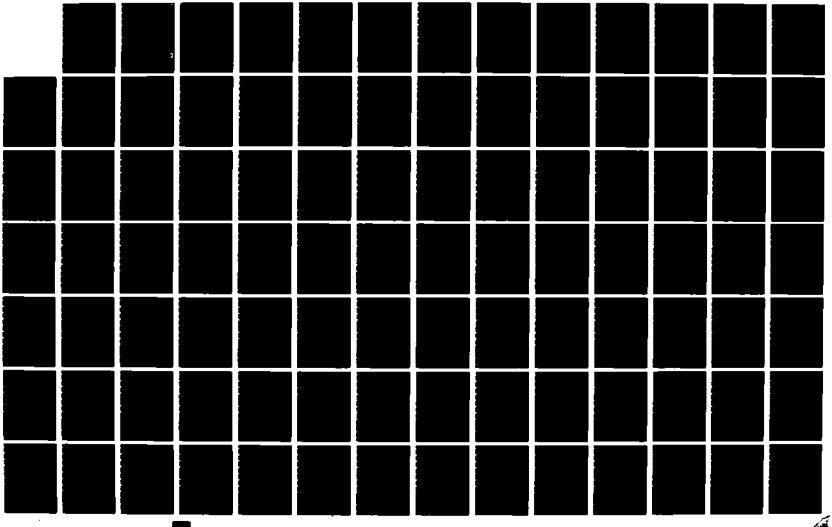

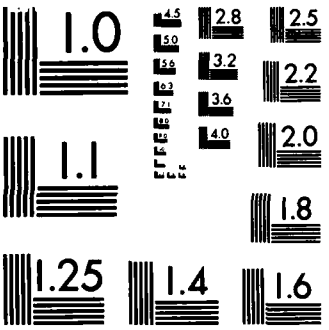

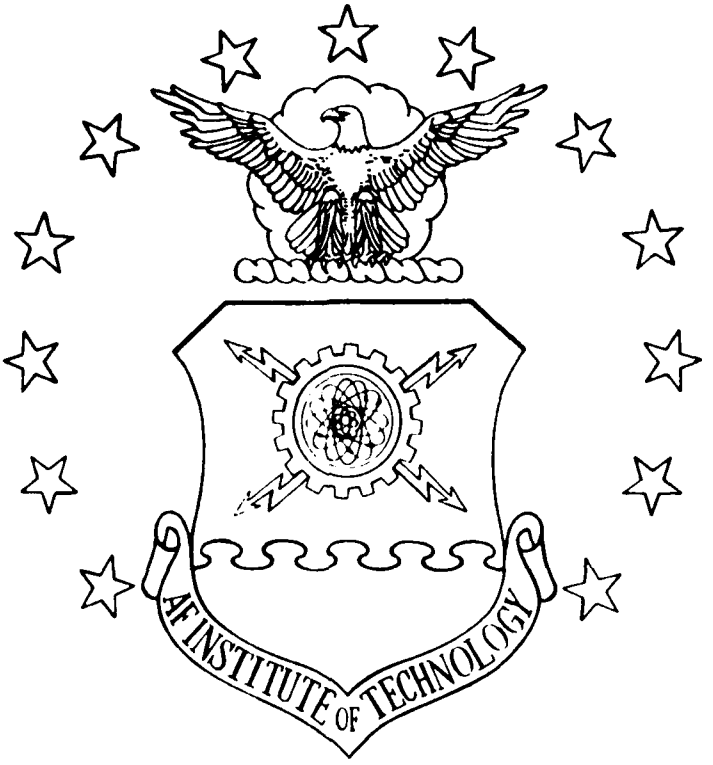

AN ANALYSIS OF THE SUPERINTENDENT POSITION IN AIR FORCE CIVIL ENGINEERING

THESIS

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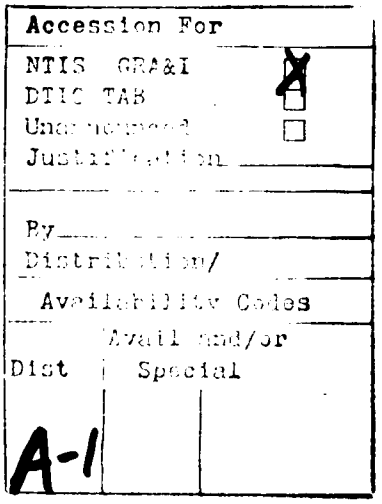

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AN ANALYSIS OF THE SUPERINTENDENT POSITION IN AIR FORCE CIVIL ENGINEERING

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Engineering Management

John T. Muraoka, P.E.

Captain, USAF

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Abstract

This research provided a preliminary analysis of the Superintendent position in Air Force Civil Engineering. A survey was developed using specific tasks based on the work of Henry Mintzberg. Respondents were asked to provide the time spent on each task as well as the relative importance of each task. The data was then analyzed to determine how much time Superintendents spent on each of Mintzberg's ten roles and which roles were found to be most important by the Superintendents. The analysis indicated that Superintendents spent the most time performing a leadership role. They also found this role to be the most important to the overall success of their jobs. The analysis also indicated that the figurehead or ceremonial role was the least important and the least time consuming. There was also virtually no difference in the time spent on each of the roles between civilian and military Superintendents or between CONUS and overseas based Superintendents. Recommendations for implementation of this research and for further research were also presented.

AN ANALYSIS OF THE SUPERINTENDENT POSITION IN AIR FORCE CIVIL ENGINEERING

I. Introduction

Overview

Chapter 1 begins with a brief background of the problem and then provides a justification for the research as well as a specific statement of the problem. Next, the assumptions underlying the research are provided as well as the objectives of this research. Chapter 1 concludes with four research questions that will address the research objective.

Background

Managers structure their organizations in the most efficient way that will achieve their goals. In civilian companies, efficiency is measured in terms of the amount of profit a company generates relative to its costs. Thus, an organization will usually be structured to incorporate the smallest amount of personnel or resources possible to get the job done. In this way, overhead is minimized and profits are maximized.

In the Air Force, while there is no profit motive, there is this same desire for efficiency. With ever increasing fiscal constraints being placed on the federal government in

general and the DoD in particular, the familiar phrase, "doing more with less," takes on added meaning. In the Air Force in general, and in Civil Engineering (CE) in particular, it means making the most of our assigned personnel. The recent trend in the Air Force is towards doing more and more jobs by contract. For managers in CE, efficiency is an important concern. If Air Force personnel are not efficient, they could be replaced by contractors who are often more efficient and who cost less.

The operations division of a typical Air Force CE Squadron consists of three layers of management (see figure 1). The Chief of Operations (O&M) is at the top, below him are several Superintendents, and below each Superintendent are several shops, each with a Shop Foreman. The operations division of any CE squadron usually contains over half of all the personnel assigned to that squadron and is responsible for all in-house work performed by the squadron. To accomplish this task, the operations division uses a tremendous amount of resources -- both material and personnel. For example, the 15th CE Squadron at Hickam AFB consists of well over 500 personnel, both civilian and military. The operations division consists of over 250 people and annually uses over 3 million dollars worth of supplies and material.* With such large personnel and material requirements, it is important that the operations

* The author served as the Chief of Readiness and Logistics at Hickam AFB. Besides his other responsibilities, he managed the squadron's Material Control section.

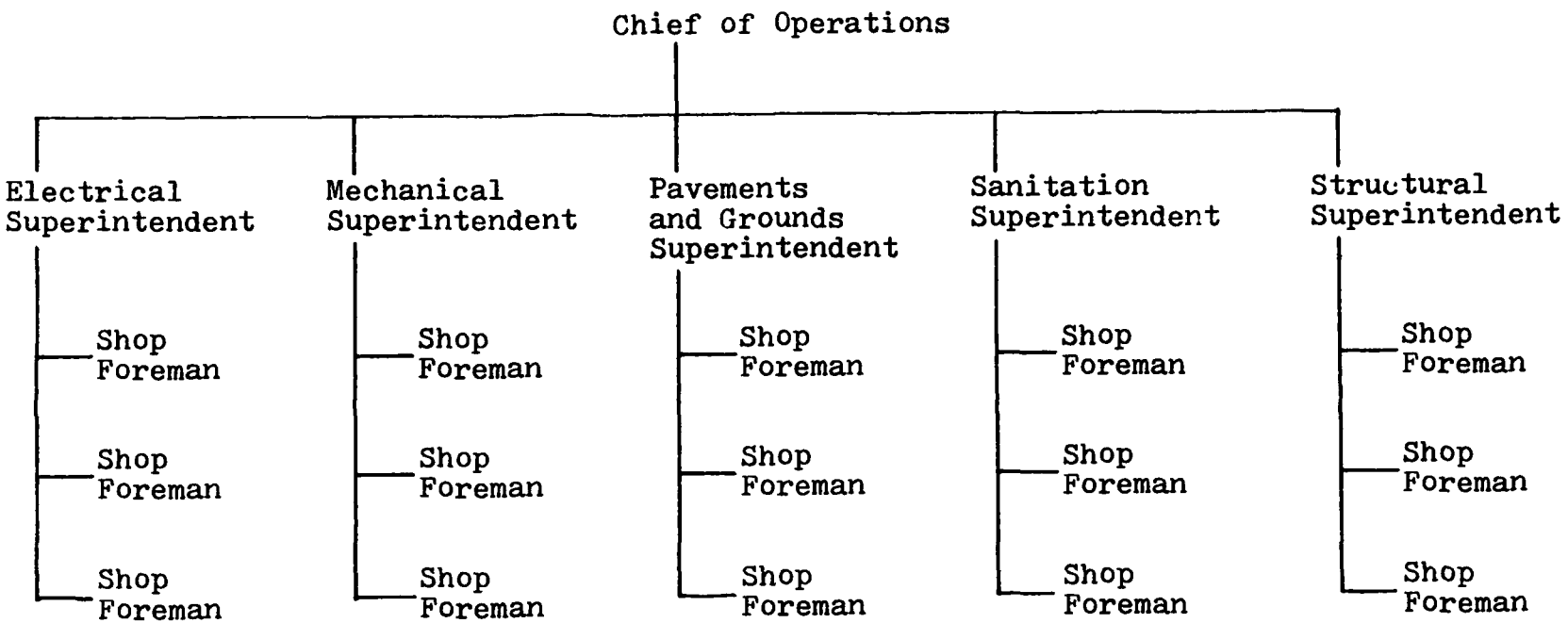

Figure 1. Typical CES O&M Division

Work-Shop Management Structure

division be structured so it operates in the most efficient manner.

The Superintendent position has served for a long time as a "buffer" between the shops and the Chief of Operations. A typical Superintendent begins his career in the shops as a worker or technician, and over many years works himself up to eventually become a Shop Foreman. From this point in his career forward, he is less and less a technician and more and more a manager. Based on a competitive selection process, he is selected for the position of Superintendent from among several Foremen. In my experiences, many of the decisions that Superintendents should be making are being made by the Chief of Operations or by others in the organization. Thus, it is possible that in some cases, the operations division is functioning, in effect, without the full contribution of many Superintendents. It could very well be that the position could be abolished immediately with very little or no ill effects being felt.

Justification

This study is justified by the fact that the Civil Engineers at the Air Staff are concerned with this topic area. However, before the Air Staff can reach any conclusions regarding changes to the Superintendent position, some basic questions about the position will need to be addressed. This research will help to answer some of these questions.

Statement of the Problem

The basic question that is being addressed is, "Is the position of Superintendent needed in Air Force Civil Engineering?" However, before the basic question can b answered, a more specific problem needs to be addressed. The specific problem that this research will address is: "What exactly does a Superintendent do?" Before any change to the position can be proposed, the complete breadth of the position must be known so that any effects on the organization resulting from these changes can be accurately and fully analyzed. Further, the functions of Superintendents must be identified so that top management will know the extent of the workload that will need to be distributed should the position ultimately be abolished. As a result, a job analysis of the Superintendent position will need to be conducted before any conclusions can be drawn.

Assumptions

This thesis will be based upon the following two assumptions:

1. The Superintendents are managers and as such, should perform the functions and roles normally associated with all managers.

2. The roles and functions of the Superintendent should correspond closely to the general roles of all managers as outlined by the research of Henry Mintzberg.

Research Objectives

The objective of this research is to produce information needed by the Air Staff to determine whether the Superintendent position should be changed or kept as it is now. A job analysis will help the Air Staff make two important decisions. First, is a change needed? Second, if a change is called for, what type of change is needed?

Research Questions

To achieve the research objective of this thesis, the following research questions will be addressed:

1. What types of managerial tasks do CE Superintendents spend most of their time engaged in?
2. Which tasks do Superintendents consider important to the overall success of their jobs?
3. Do the tasks performed by CE Superintendents differ between civilian and military Superintendents?
4. Do the tasks performed by CE Superintendents differ between CONUS and overseas based Superintendents?

II. Literature Review

Introduction

This chapter provides a review of the literature with respect to two areas. First, managerial roles and functions are examined and second, decentralization, centralization, and efficiency in organizations is covered. This review will cover the four functions of managers according to Henri Fayol, the roles that managers perform according to Henry Mintzberg and finally, the review will look at decentralized and centralized management structures from the aspect of efficiency.

Job Analysis of Managerial Jobs

Introduction. What does a manager do? Ask any manager and you will likely get a wide range of responses. Even among circles of management academia, there is disagreement. In fact, "There have been many attempts to describe the contents of the 'job' of management" (1:3). Numerous points of view, referred to as "schools" of management theory, have been presented and debated. It has become, as one author describes it, a "management theory jungle." Some of these theories include the contingency or situational approach, the mathematical or "management science" approach, the decision theory approach, the systems approach, and the empirical or case approach (12:176). In spite of all this theory, however, we know very little about what managers do. The

problem is that much of the ". . .literature is more concerned with general speculations regarding the functions of the executives than with actual descriptions of their work" (15:8). For example, the Contingency Approach is one of the more popular theories in use today. The basic premise of the Contingency Approach states that there is no one best way to manage. "A method highly effective in one situation may not work in other situations" (6:8). This method is a popular approach to the question of how a manager should manage, but does very little to answer the question, "What exactly does a manager do?"

This portion of the review will begin to answer the question of what a manager does. Formal management theories provide important background information that is useful in understanding what a manager does. While presentation of all formal management theories is beyond the scope of this review, two of the more highly regarded theories will be addressed. First, the classical school of management theory and second, Henry Mintzberg's management roles approach will be addressed.

The Classical Approach. Although managers have been managing for years, it can be said that, "The management field's body of literature began with the Classical Approach" (6:81). The early ideas on how to manage organizations is now known as Classical Organization Theory. Although there are many writers of Classical Organization Theory, one of the more prominent ones was Henri Fayol. Fayol felt that

managers were not effective enough at their jobs. He established some guidelines for managers to use in order to manage more effectively. His ideas were used as a starting point for much of the future management research and thought that was to follow. In fact, they are still being taught in many management classes today. Henri Fayol's, ". . .chief desire was to elevate the status of management practice by supplying a framework for analysis" (6:89). In 1916, "Fayol introduced his five basic managerial functions -- planning, organizing, coordinating, commanding, and controlling" (15:9). In my review of the literature, I have come across many versions of Fayol's five basic functions. Some writers have added functions and others have deleted functions. The version I have found most prevalent consists of four functions: planning, organizing, controlling, and directing. It is this version that will be discussed.

Planning is one of the most important functions a manager performs. In fact, many people consider planning, ". . .the most important managerial function" (10:142). What is planning and why is it so important? Generally, planning is, ". . .developing in broad outline the things that need to be done to accomplish the objectives of the organization and the most effective ways of doing them" (10:8). When a manager plans, he determines how to move from a present starting point to a desired future result. To accomplish this, a manager must be concerned with four fundamental elements. They are: 1) objectives, 2) actions, 3) resources, and 4)

implementation (6:98).

Establishing objectives is an important part of planning. Objectives can be defined as the, ". . .desired state of affairs which the organization attempts to realize" (10:113). These objectives must be realistic and explicit enough so that definite strategies and tactics can be created to achieve them.

Once the organization's objectives are established, the manager must determine what actions will achieve them. "Planned courses of action are called strategies and tactics" (6:108). With a strategy in mind, the manager must then decide on requirements or resources that will be needed. For example, an objective may require an organization to obtain more personnel, increased training, or more capital.

The final element of planning, is implementation. In this phase, the manager carries out his strategy to meet the established objective. In the example above, the manager will employ his strategy of obtaining more personnel, capital, and training. It is evident that, "all the planning in the world will not help an organization realize objectives if plans cannot be implemented" (6:115). The best plans are useless if more personnel, capital, and training are not available.

Organizing is another of the four functions of management. "The purpose of organizing is to establish the formal organization structure and to staff it properly" (11:40). Many factors must be considered in order to

establish an organizational structure properly. Such factors as the environment, the nature of the organization's work, and the organization's workers must all be taken into consideration. In addition to these factors, the manager must consider three concepts when dealing with formal organizational structures. They are: ". . .1) division of labor, 2) departmentation, and 3) span of control" (21:194). Division of labor involves breaking up large tasks into smaller ones, since smaller tasks are often more efficiently accomplished than larger ones. "Departmentation refers to the formal structure of the organization, composed of various departments and managerial positions and their relationships to each other" (21:198). Effective departmentation occurs when individuals or small groups are joined into larger work units making the completion of an overall task easier and more efficient. Span of control refers to the number of subordinates who report directly to a supervisor. Thus, a manager must be aware of the number of work units created when departmentalizing since an optimum span of control must be maintained. Organizing can be viewed as, ". . .the process of breaking down the overall task into individual assignments and then putting them back together in units. . ." (6:158).

Controlling is the third of the four management functions. Controlling, briefly, refers to, ". . .all activities the manager undertakes in attempting to assure that actual results conform to planned results" (6:218).

Managers use three types of control procedures, ". . .preliminary controls, concurrent controls, and feedback controls" (21:426). Preliminary controls are measures such as rules, policies, and procedures established by managers to increase the chances that actual results will be favorable. "Concurrent control consists primarily of the actions of supervisors who direct the work of their subordinates" (6:228). Concurrent controls are measures that go on simultaneously with the work insuring that the work is going as planned and is headed in the right direction. Feedback can be considered "after the fact" controls. Typically, after results are analyzed, feedback control in the form of punishment or reward is implemented. "All three control processes are necessary for an effective control system" (10:287).

The final management function is directing. Directing encompasses such concepts as motivation, job design, job enrichment, and leadership. When a manager is faced with an objective, he must insure that his subordinates employ the most efficient means of accomplishing the objective. To do so, he must motivate them, insure that their jobs are adequately designed, and insure that all objectives and goals are clearly communicated. "Directing can be described as, ". . .the use of communication and leadership to guide the performance of one's subordinates toward the achievement of the organization's plans" (11:77).

From the preceeding discussion, it is evident that

management is a complex task and that, ". . .much of the manager's work is challenging and non-programmed" (15:4). Many have observed that, ". . .the four fundamental functions of management are inextricably interwoven and interrelated; the performance of one function does not cease entirely before the next is started" (21:34). In the realm of actual management practice, the four functions of management only touch upon the question of what a manager does.

The Managerial Roles Approach. "The job of managing involves specific roles and skills" (15:4). A role can be considered, ". . .an organized set of behaviors belonging to an identifiable office or position" (15:54). In 1973, after extensive research and observations, Henry Mintzberg described ten roles managers perform. Using the structured observation method, Mintzberg studied five chief executives of various companies; his primary objective being to describe work content. Henry Mintzberg's study differed from others in one important aspect, the categories were developed after the observations had taken place. "As a result, the study develops a new description of managerial work content as well as a number of conclusions on work characteristics that reinforce the findings of earlier work-activity studies" (14:25). As Mintzberg put it, "The manager's job can be described in terms of various roles or organized sets of behaviors. . ." (14:54). Mintzberg divided the ten roles into three groups according to broad concerns of a manager; interpersonal relationships, transfer of information, and

decision-making.

"Three of the manager's roles arise directly from his formal authority and involve basic interpersonal relationships" (14:54). The first of these roles is called the figurehead role which deals with the manager's responsibilities that are ceremonial in nature and which are due to his position. For example, in the Air Force, when a Base Civil Engineer dedicates a new facility or when a Squadron Commander presents an award, they are both acting in their figurehead roles. This is an important role for managers because, "by virtue of his position. . .every manager must perform some duties of a ceremonial nature" (14:54).

The leader role is most associated with management because, "the influence of the manager is most clearly seen in the leader role" (14:55). The manager as a leader provides guidance and direction to his subordinates. Thus the leader role can be said to influence everything a manager does. For example, when a commander personally follows the Air Force physical fitness guidelines or when he keeps his own personnal appearance "sharp," he is fulfilling his leadership role. This role is very important to effective management because, ". . .in virtually everything he does, the manager's actions are screened by subordinates searching for leadership clues" (15:61). Through the leader role, the manager works the integration between subordinate and organizational needs.

The final interpersonal role is the liaison role. In this role, ". . .the manager makes contacts outside his vertical chain of command" (14:55). For example, the Base Civil Engineer will find it in his squadron's best interest to have a good relationship with the Chief of Transportation. This will help obtain better vehicles, and also help to obtain quicker repair service. These relationships can best be described as reciprocal in nature. The manager strengthens these relationships through the giving and receiving of "favors" on behalf of his organization. The liaison role is important because, "It represents the beginning of a key part of the manager's job -- the linking of the environment with his organization" (15:64).

The second set of managerial activities are the informational roles. In these roles, the manager acts as, ". . .the nerve center of the unit -- the central focus for the receiving and sending of non-routine information" (10:12). The three roles under this set of managerial activities are the monitor role, the disseminator role, and the spokesman role.

"The manager as monitor is continually seeking, and being bombarded with, information that enables him to understand what is taking place in his organization and its environment" (15:67). Through the figurehead and liason roles, as well as other roles, the manager gathers information that is of use to the organization. For example, a Squadron Commander at a dinner party as part of his

figurehead role, may learn of a new policy or rule change which will be of use to his organization in the future.

"The disseminator role involves passing to subordinates special or privileged information that they would not otherwise obtain" (10:12). For example, in the illustration above, the information obtained at the party is that the Inspector General will be concentrating on safety on its next inspection visit. The Squadron Commander will pass the information to his subordinates to insure that the unit is within or above standards in this area. One problem concerning the disseminator role is delegation. Managers must be sure all pertinent information is passed on to subordinates so in his absence or in the future, consistent decisions can continue to be made.

"While the disseminator role looks into the organization, in the spokesman role the manager transmits information out to his organization's environment" (15:75). For example, when a manager briefs his boss on the performance of his unit, that manager is acting as the spokesman for his unit. This role is important for both manager and organization since, ". . .to gain the respect of outsiders, the manager must demonstrate an up-to-the-minute knowledge of his organization. . ." (15:76).

The third and final set of roles are the decisional roles. They consist of the entrepreneur role, the disturbance handler role, the resource allocator role, and the negotiator role.

"As entrepreneur, the manager seeks to improve his unit, to adopt it to changing conditions in the environment" (14:56). If through some of his other roles, the manager discovers a problem or opportunity for his unit, he must make a decision to change a policy or procedure in order to best adapt his unit to the changing conditions. Thus, ". . .in the entrepreneur role the manager functions both as initiator and as designer of important controlled change in his organization" (15:81).

"The disturbance handler role depicts the manager involuntarily responding to pressures" (14:57). For example in the Air Force, there are many reasons for potential disturbances such as, lower than expected funding, changes in policy by headquarters, and new commanders. Though his actions might be short term solutions, the manager must act quickly because these disturbances, by their nature are potentially dangerous. It is a fact of life that, ". . .every manager must spend a good part of his time responding to high-pressure disturbances" (14:57).

Managers must also decide who gets what. "As formal authority, the manager must oversee the system by which organizational resources are allocated" (15:85). This is an important role since an organization will not have all the resources it desires. Strategy and prioritizing are necessary in order to insure that important objectives have adequate resources. The manager must effectively allocate his time, the fixed amount of work his unit can perform, as

well as physical resources such as materials and capital.

The final managerial role is the negotiator. "From time to time, the organization finds itself in major, non-routine negotiations with other organizations or individuals" (15:90). This is an important role for the manager because in many cases, he is the only person possessing the information needed to carry out successful negotiations. He is, in effect, ". . .the nerve center that important negotiations require" (14:59).

The ten managerial roles, although studied separately, form an integrated whole. "No role can be pulled out of the framework and the job be left intact" (14:59). Together with the four managerial functions, they begin to give an understanding of what a manager does.

Summary. Henri Fayol's four management functions provide a general picture of what a manager does. However, Henry Mintzberg's managerial roles approach provides a much clearer picture of what a manager actually does. Both theories provide insight into a manager's job. Fayol's classical approach provides a general view of what a manager does while Mintzberg's manaagerial roles approach provides a more precise view. Insight into the Superintendent's job can be gained from both theories. The Superintendent, as a manager, should perform the functions of planning, organizing, directing, and controlling. More specifically, however, the Superintendent should also perform the ten roles of Henry Mintzberg. For example, a manager is responsible

for passing information to his subordinates and to insure that their work is coordinated towards the organization's overall goals. Here, the manager is engaged in the disseminator role. The manager is also responsible for accepting awards given to his section and for giving out awards to superior performers in his section. In this instance, the manager is engaged in the figurehead role. These are just two examples of manager performing Mintzberg's managerial roles.

Decentralization, Centralization, and Efficiency in Organizations

Introduction. It is important to consider organizational structure when considering the Superintendent position. The amount of centralization or decentralization that the organization possesses will affect the management characteristics of the Superintendent position. Further, the centralization or decentralization goals of the organization must be considered before any changes to the Superintendent position are proposed. This portion of the review examines the efficiency of centralized and decentralized management structures and the factors that influence an organization's tendency towards decentralization or centralization. A broad array of literature can be found covering almost every aspect of centralized and decentralized management structures. This portion will focus on three factors that influence an organization's decision to decentralize and the aspects that make one structure more efficient than the other. The three

main factors that will be covered are the size of an organization, the external environment of an organization, and how much control the management of an organization wants to retain or delegate. These three factors will be examined from the aspect of how they affect an organization's decision to centralize or decentralize and how they affect the efficiency of either structure.

Before proceeding, three terms, organizational structure, centralization, and decentralization need to be defined. Organizational structure refers to the way a company is arranged. "The structure of an organization, similar to the anatomy of a living organism, can be viewed as a framework" (6:158). Figure 2 is an example of an organizational structure where the President of the firm oversees the three Vice Presidents.

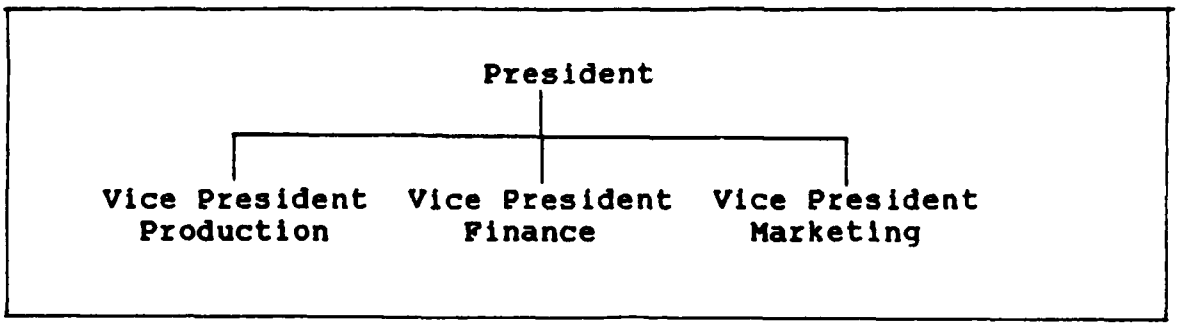

Figure 2. A Functionally Organized Firm (reprinted, Dessler, 1976, p. 108)

Although a lot of research has been accomplished on the topics of centralization and decentralization, ". . .there is

no concensus on the definition of these terms" (4:106). Most authors define centralization and decentralization in terms of the power for decision making in an organization. For example, one author considers an organization centralized, ". . .when all power for decision making rests at a single point in the organization. . ." (16:181). For example, in a centralized organization, top management (sometimes called the president of the company) makes all decisions. Subordinates carry out top management's orders but are not responsible for making any decisions.

Decentralization, on the other hand, can be examined from many different perspectives. Decentralization can be looked upon as, ". . .increasing the number of centers of decision making and the number of initiators of policy. . ." (7:217). For example, the president of a company will authorize the vice president of personnel to make all decisions concerning hiring new employees. In a decentralized organization, decision making authority is delegated down from the president to lower levels in the organization.

Factors Affecting the Efficiency of Decentralization. In recent years, there has been a great deal of concern over the efficiency of American organizations. Everyone involved, from labor to management, is being criticized for allowing American industry to lose its competitive edge against foreign industry. One idea that has received a lot of attention over recent years is increased employee

participation in decision making to increase job satisfaction. Employee participation is very successful in Japan and is one idea that many U.S. businesses are now considering in order to increase productivity. Increased employee participation in decision making is closely related to decentralization. "Decentralization of authority typically means a reduction of direct organizational controls and an increased feeling of autonomy on the part of the employees" (20:482). This feeling of autonomy, ". . .typically tends to be relatively satisfying to organizational members" (20:482). Increasing organizational effectiveness is one reason to decentralize. However, as mentioned earlier, there are three important factors that determine whether an organization should consider decentralization and how successful those efforts at decentralization will be.

The size of an organization is a significant determinant of organizational structure. As an organization becomes larger and more complex, the scope of the problems and decisions faced by management also become more complex. For instance, the problems and decisions faced by a multi-divisional, multi-national organization like General Motors are much more complex than those faced by a smaller, more local company like Hawaiian Electric Company which serves the island of Oahu in the State of Hawaii exclusively.

For larger organizations, centralization of decision making power is not only costly, it is also inefficient. For

example, when a lower level manager has to wait while information is gathered, assembled, and sent to a higher level manager before a decision can be made, that wasted time can be very costly to the organization. There are also the additional costs of gathering, assembling, and transmitting the information. In many instances, decisions can be made quickly and more efficiently at a lower level since lower level managers are better informed and more familiar with the operations at their level than a higher level manager would be. Thus, ". . .decentralization of decision making can be viewed as the dispersion of power to reduce the costs of managing a larger corporation" (13:724).

Conversely, a centralized management structure in smaller organizations is often more efficient because there are usually fewer levels of management. For example, Pop of Mom and Pop General Store can easily keep track of his entire operation. He serves as chief executive officer as well as buyer, accountant, and chief of marketing. Thus, it can be concluded, ". . .that personnel size and centralization are negatively related" (8:391). Generally, smaller organizations will have a greater tendency towards centralization while the opposite is true for larger organizations.

The external environment of an organization also affects an organization's structure. An organization's external environment is made up of components such as an organization's clients, competitors, and suppliers in

addition to factors such as changes in technology, changing economic conditions, social and cultural condition, and government regulations (6:32-40). One aspect of the environment that affects an organization's structure is the certainty and uncertainty of the environment. When the factors and components listed above are unsettled and unpredictable, the environment is called uncertain. Organizations in uncertain environments tend to be more decentralized while organizations operating in certain environments tend to be more centralized (19:679). For example, during periods of uncertainty, it makes sense for top management to delegate decision making power closer to the operational level since managers at this level are usually more aware of the changes in the environment that directly affect them.

The degree of competition facing an organization also plays a role in determining its organizational structure. While there has been a lot of research done on the correlation between competition in an organization's external environment and an organization's tendency towards decentralization, much of the research can be summarized by the fact that ". . .under highly competitive market conditions, relatively decentralized firms are more effective than those which are relatively centralized. . ." (3:669). In industries faced with high levels of competition, it is often more efficient to delegate decision making power lower in the organization. Innovativeness along with wise and

timely decisions are what gives a company the edge in highly competitive situations. Managers at lower levels, due to their familiarity with day-to-day operation, are able to make decisions affecting their operations more efficiently than managers at higher levels. By examining the amount of competition and the degree of certainty and uncertainty in an organization's external environment, it can be concluded that, "the organization's environment is the contextual factor most frequently related to the degree of centralization found in firms" (17:708).

The final factor that affects an organization's tendency towards decentralization or centralization is the amount of control top management wants to retain or delegate. If top management wants to keep complete control over the decisions made in the organization, a centralized management structure should be adopted. However, from the previous discussions regarding organizational size and environment, it is evident that under certain conditions, decentralization of decision making power is more efficient than centralization. In an organization's decentralization effort, top management can delegate as much or as little decision making power as it chooses. Some form of control should always be retained during any decentralization effort and in most cases top management's decision to decentralize ". . .is likely to be accompanied by an increase in standard procedures and documentation designed to maintain control and consistency of performance" (9:981). For instance, in the Air Force,

decision making authority is delegated. However, numerous Air Force regulations, manuals, and pamphlets are implemented in order to guide and structure decisions made at all levels within the Air Force. Thus, decision making power is often given to managers at lower levels, but along with this power come guidelines and policies designed by top management to limit the lower level manager's alternatives to those within an acceptable range. This aspect of decentralization can be viewed as, ". . .typically part of a bureaucratic, impersonal style of control" (2:162). However, effective controls are needed in all organizations and in order to decentralize effectively, ". . .both process and personnel controls must be developed. . ." (20:483).

Summary. The efficiency and success of an organization's operations are often influenced, in part, by the management structure that the organization adopts. The two management structures examined in this section were centralized and decentralized managements structures. Both structures deal with differences in the amount of decision making power that is delegated by top management to lower levels in the organization. In a centralized management structure, top management retains most of the decision making power in the organization. In a decentralized management structure, decision making power is delegated by top management to lower levels in the organization.

Several factors determine the most efficient structure for an organization. The three factors examined in this

section were the size of the organization, the external environment of the organization, and the amount of control that management wants to retain or delegate. Larger organizations tend towards a decentralized management structure more often than a smaller organization. For larger companies, decentralization is often cheaper and more efficient than centralization. Another factor is the external environment of an organization. Organizations faced with uncertain and highly competitive environments often favored a decentralized management structure whereas organizations faced with certain or non-competitive environments often favored a centralized management structure. The final factor covered was control. With a centralized management structure, top management will retain more direct control over decision making in the organization. However, even with a decentralized management structure, top management can retain as much control as it desires through the use of rules, policies, and regulations. It is important for top management to retain some controls if an organization's decentralization efforts are to be successful.

There is no single management structure that will work for all organizations in all situations. Leaders of all organizations must be aware of the factors that determine the best structure for an organization to adopt. In this age of tight budgets and dwindling resources, all managers must be aware of the factors and methods of determining the most efficient way to operate their organizations.

Conclusion

This literature review examined two main areas. The first area looked at managerial roles and functions. The literature revealed that although Henri Fayol's four functions or classical approach is among the most widely favored today, it is inadequate to explain what a manager really does. Henry Mintzberg's managerial roles approach provides much more insight into the roles performed by a manager. It is this approach that will be used to guide the remainder of this thesis.

The second part of this review looked at organizational structure and efficiency. This portion looked at decentralization and centralization from the standpoint of efficiency. The review discussed three factors which determine the most efficient structure for an organization to adopt. The most important discovery of the review was the fact that there is no single management structure that will work for all organizations in all situations. This portion of the review provided good insight into the area of organizational structure. Organizational structure and its effects on the efficiency and effectiveness of an organization are important factors which must be considered whenever changes to a management position, such as the Superintendent position, are proposed. Further, organizational structure must also be considered when examining a particular position or job. The amount of centralization or decentralization that an organization

possesses will affect the characteristics of all management positions in that organization. The characteristics of the Superintendent position will be affected by the organizational structure of the CE squadron. The level of the position, the requirements of the position, and the span of control are some of the facets of organizational structure that will affect a position or job.

III. Methodology

Introduction

This chapter discusses the specific methods used to answer the research questions. The research objective was to obtain information needed by the Air Staff to determine whether the Superintendent position should be changed or kept as it is now. Specifically, the functions and the tasks performed by Superintendents were to be identified. To achieve this objective, the following research questions required answering:

1. What types of managerial tasks do CE Superintendents spend most of their time engaged in?
2. Which tasks do CE Superintendents consider important to the overall success of their jobs?
3. Do the tasks performed by CE Superintendents differ between civilian and military Superintendents?
4. Do the tasks performed by CE Superintendents differ between CONUS and overseas based Superintendents?

This chapter is subdivided into four sections. The first section justifies the survey questionnaire approach. The second section covers the population in question. The third section discusses the survey instrument used. The final section discusses the analysis techniques used to analyze the

returned data.

Justification of Approach

This research is aimed at CE Superintendents. A search of the literature as well as a check with the Air Force's Occupational Measurement Center at Randolph Air Force Base, Texas revealed no sources of information which comprehensively addressed a job analysis of the Superintendent position. As a result, this survey approach was needed in order to gather sufficient information to perform such a job analysis.

A review of the literature in Chapter II, revealed several functions or tasks that were characteristic of all managerial jobs. This research was based on the assumption that Superintendents are managers and as such, should perform those functions or tasks that all managers perform.

The observation method is usually used in research of this kind. The researcher simply observes the subject at work and records the functions and tasks that were performed. Such an observation method, however, was not feasible in this case due to the large number of Superintendents and also to the wide geographic dispersion of the various Air Force installations. For these reasons, survey research was chosen as the most cost effective way to gather the data needed.

Population of Concern

The sample was selected based on the duty Air Force Specialty Codes (AFSC) of the Superintendents. The AFSCs

used to obtain the names and addresses of the Superintendents were based on Air Force Manpower Standard 44XO dated 22 December 1978. Based on the manpower standard, the listing of names and addresses should have consisted of about 500 names. The resulting list, however, consisted of just over 260 names and many were not Superintendents. The listing also contained only a little more than 40 overseas based Superintendents.

AFSC	TITLE
54500	Mechanical Superintendent
55200	Structural Superintendent
54200	Electrical Superintendent
56600	Sanitation Superintendent
55100	Pavements & Grounds Superintendent

These five specialties constitute the "core" of CE Superintendents. AFR 65-10 also listed the electrical power production Superintendent. However, from the author's experience, all bases do not employ an electrical power production Superintendent. At many bases, there is no power plant or aircraft arresting system, two of the power production section's major responsibilities. In such cases, the generator maintenance function often comes under the control of the electrical Superintendent. For this reason, the sample was limited to the five "core" specialties.

Survey Instrument

A survey questionnaire was used to collect the data required to answer the research questions. Prior to being submitted to the Personnel Survey Branch, AFMPC for approval,

the survey was pre-tested. Fifteen questionnaires were given to selected faculty members and students at the School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson AFB, Ohio. Their responses were used to insure clarity and comprehensiveness of the survey. Several changes were recommended and implemented prior to the survey being submitted to AFMPC at Randolph AFB, Texas.

The approved questionnaire for military Superintendents was assigned USAF survey control number 85-45A and the approved questionnaire for civilian Superintendents was assigned USAF survey control number 85-45B. The survey packages were mailed to CONUS and overseas Superintendents, both military and civilian, on 20 May 1985.

The survey questionnaire consisted of two sections. The first section gathered background information on the respondents. Each Superintendent was asked to provide such information as rank, years as a Superintendent, years in service, levels of education, Professional Military Education (PME), Major Air Command (MAJCOM), etc. This information was used to give the reader a frame of reference or a "feel" for the population being sampled.

Section two of the questionnaire consisted of a job analysis. Based on the review of the literature, it was concluded that Henry Mintzberg's ten managerial roles constituted the best approach to describing a manager's job. This portion of the questionnaire was developed by taking each of Mintzberg's broad roles and creating two or three

specific tasks that a Superintendent typically performs. For example, under Mintzberg's Leader role, the following specific tasks were formulated:

-conducting formal inspections of the shops
-directly supervising and/or advising foremen and controllers
-reviewing and evaluating subordinate's JPAS and APRS.

Depending on the responses to the three questions, conclusions were drawn regarding the performance of Mintzberg's Leader role. In a similar manner, each of the ten managerial roles were surveyed.

Responses from Section 2 of the questionnaire were in two parts. The first part asked the respondent to estimate the number of hours spent each week on a particular task. This part consisted of seven possible responses ranging from zero hours to more than ten hours with a space provided for an estimate if more than ten hours per week were spent on a particular task. The second part asked each respondent to rate the relative importance of each task to the overall success of his job. The response to the second part was by a five point Likert scale according to the following key:

a. Very important to the overall accomplishment of my job.

b. Moderately important. Is of above average importance to the overall accomplishment of my job.

c. No strong feelings. Is of average importance to the overall accomplishment of my job.

d. Below average importance. There are only a few tasks which are less important to the overall accomplishment of my job.

e. Well below average importance. Is one of the least important tasks for which I am responsible.

The responses were designed to provide information regarding the amount of time spent on each task and the relative importance of each task.

The survey questionnaire was developed with two factors in mind. First, Henry Mintzberg's ten managerial roles were covered. Second, the job requirements of the Superintendent according to AFR 85-1 were incorporated into survey questions corresponding to Mintzberg's ten managerial roles. The primary reason for incorporating the roles in AFR 85-1 into the survey was to insure that the survey was realistic and comprehensive.

The thirty-four questions in the survey represented at least three questions for each of Mintzberg's ten roles. It was felt that at least three questions was needed to insure validity. In addition, time was an important factor and fifty questions was estimated to be the maximum number of questions the questionnaire should contain so that the time needed to complete the questionnaire would be kept to fifteen minutes or less. The pre-test indicated that the questionnaire took fifteen to twenty minutes to complete.

Section two of the survey, the job analysis portion, was identical for both military and civilian Superintendents. Section one, the background information portion, differed

only slightly in the areas of rank, time in service, and Professional Military Education (PME).

Analysis

Survey responses were manually coded and input into AFIT's Harris computer system. The Statistical Package for the Social Sciences (SPSS) was used to perform the statistical analysis. As was covered earlier, four research questions were addressed as part of this research. The procedures used to answer the research questions are outlined in the remainder of this section.

> Research Question 1. "What types of managerial tasks do CE Superintendents spend most of their time engaged in"?

The first research question was descriptive in nature. Two methods of analysis were used. The FREQUENCIES subroutine of SPSS was used to perform the first part of the analysis. Response "a" was taken as 0 hours per week, response "b" as 1.5 hours per week, response "c" as 3.5 hours per week, response "d" as 5.5 hours per week, response "e" as 7.5 hours per week, response "f" as 9.5 hours per week, and response "g" as whatever value was filled in the blank provided. In this manner, various statistics such as the mean, median, and standard deviation were calculated.

The second method used to analyze the data was factor analysis. Factor analysis was used to determine if the thirty-four tasks could be combined into a smaller number of

groupings. It was performed primarily as a method to double check the strength of Mintzberg's ten roles. The SPSS subroutine FACTOR was used to perform this part of the analysis. Factor analysis is used to determine if underlying relationships exists in the data such that the data can then be grouped or arranged in order to account for observed interrelationships (18:469). A detailed explanation of factor analysis is beyond the scope of this research. However, a brief examination of the procedure is as follows. There are three steps of factor analysis. These steps are, ". . .(1) the preparation of the correlation matrix, (2) the extraction of the initial factors -- the exploration of possible data reduction, and (3) the rotation to a terminal solution -- the search for simple and interpretable factors" (18:469). In the first step, the method by which the correlation between the variables will be measured is established. Through this process, the user defines the ". . .revelant universe of analysis" (18:470).

"The second step of factor analysis is to explore the data-reduction possibilities by constructing a set of new variables on the basis of the interrelationships exhibited in the data" (18:470). These factors are usually established such that one factor is independent from, or orthogonal to. one another (18:470). This research sought to break the thirty-four variables into inferred factors. Inferred factors are factors that are based on the fact that any observed correlations are the result of some underlying

regularity in the data (18:470).

In the final step, the factors are rotated into what can be called "best fit" groups. This step is not a very definite or concrete step. This is because there is no unique and generally accepted solution. One factor solution can be rotated into another without violating the basic mathematical properties of the technique (18:472). Thus, factor analysis can be described as an iterative process whose results are dependent to a great degree on the judgement of the person performing the analysis.

In this research effort, beginning with the thirty-four initial variables or tasks, several iterations of factor analysis were conducted before the final "best fit" set of groups was arrived at. In this manner, factor analysis was used to determine if ten roles was the best number or if perhaps, a larger or smaller number of roles would have made better groupings.

Research Question 2. "Which tasks do Superintendents consider important to the overall success of their jobs"?

Research Question 2 examined the importance of a particular task relative to the overall success of a Superintendent's job. Two methods of analysis were used to examine this research question. For the first part of the analysis, a parametric T-test was used. The T-test could be used since the sample was random and could be considered

normal (5:259). A parametric as opposed to a non-parametric T-test was used since the data was interval level data. The T-test statistic used was as follows:

$$T = (\bar{X} - \mu) / [S / n^{1/2}] \qquad (1)$$

where

$\bar{X}$ = sample mean
μ = population mean
S = sample standard deviation
n = sample size

For this part of the analysis, a one-tailed T-test was used since the research was concerned only with tasks that Superintendents considered significantly above average in importance. The null and alternate hypotheses were as follows:

Ho: $\mu = 3.0$

Ha: $\mu < 3.0$

where

μ = population mean

The five responses in the second part of Section II were transcribed into numbers from one to five with one corresponding to "a" and five corresponding to "e". The mean of 3.0 was chosen for the null hypothesis since the value 3.0 corresponded to "c" of the survey which was a response indicating average importance. The SPSS subroutine

FREQUENCIES was used to calculate the sample means and standard deviations. The T-test statistic was then manually calculated for each of the thirty-four survey tasks. Each of the tasks were analyzed in this manner.

The second method used to analyze this research question was factor analysis. For a brief description of factor analysis, see the discussion under research question 1. Once again, the SPSS subroutine FACTOR was used to perform this portion of the analysis.

> Research Question 3. "Do the functions performed by Superintendents differ between military and civilian Superintendents"?

For research questions 3 and 4, the first sample refers to military respondents and the second sample refers to civilian respondents. Research Question 3 examined the difference between civilian and military Superintendents in regards to each of the tasks. Response "a" was taken as zero hours per week, response "b" as 1.5 hours per week, response "c" as 3.5 hours per week, response "d" as 5.5 hours per week, response "e" as 7.5 hours per week, response "f" as 9.5 hours per week, and response "g" was taken as whatever value was filled in the blank provided. In this manner, the mean values of all the responses were calculated. The null and alternate hypotheses were as follows:

$$Ho: \mu_1 - \mu_2 = 0$$

$$Ha: \mu_1 - \mu_2 \neq 0$$

where

μ_1 = mean value of first population

μ_2 = mean value of second population

The null hypothesis states that for a particular task, the difference between the mean values of time spent for civilian and military Superintendents was zero. The alternate hypothesis states that the mean times were not the same.

The statistical analysis procedure used for this part of the analysis was the two sample T-test. One of two versions of the two sample T-test was used depending on the equality of the two population variances. Both cases required a random sample and a normal distribution (5:287,292). In the case of this research, both the normality and random sample requirements could be considered to have been met. In the case where the population variances were equal, the pooled variance estimator shown below was used.

$$S_P^2 = [\ (m-1)S_1^2 + (n-1)S_2^2\ ] / (m+n-2) \qquad (2)$$

where

m = sample size of first sample
S_1 = standard deviation of first sample

n = sample size of second sample
S_2 = standard deviation of second sample

The pooled estimator was then used to calculate the T-test statistic shown below:

$$T = (\overline{X} - \overline{Y}) / [\, S_p (1/m + 1/n)^{1/2} \,] \qquad (3)$$

where

$\overline{X}$ = mean of the first sample
$\overline{Y}$ = mean of the second sample
m = size of first sample
n = size of second sample

In the case where the population variances were unequal, the version of the two sample T-test, called the Smith-Satterthwaite test, was used. This test is shown below.

$$T = (\overline{X} - \overline{Y}) / [\, (S_1^2)/m + (S_2^2)/n \,]^{1/2} \qquad (4)$$

where

$\overline{X}$ = mean of the first sample
$\overline{Y}$ = mean of the second sample
S_1 = standard deviation of first sample

S_2 = standard deviation of second sample

m = size of first sample
n = size of second sample

The F-test statistic was used to test for the equality of the population variances. The null and alternate hypotheses were as follows:

$$Ho: \sigma_1^2 = \sigma_2^2$$

$$Ha: \sigma_1^2 \neq \sigma_2^2$$

where

σ_1 = standard deviation of first population

σ_2 = standard deviation of second population

The F-test statistic used was as follows:

$$F = S_1^2 / S_2^2 \qquad (5)$$

where

S_1 = first sample standard deviation

S_2 = second sample standard deviation

If the null hypothesis was rejected, the population variances were not equal and the Smith-Satterthwaite version of the two

sample T-test was used. Failure to reject the null hypothesis indicated that the population variances were equal and the pooled variance estimator and the first version of the two sample T-test was used. Each of the tasks were analyzed in this manner.

> Research Question 4. "Do the functions performed by Superintendents differ between CONUS and overseas based Superintendents"?

This question examined overseas and CONUS based Superintendents to determine if they differed in their performance of various functions. The analysis method of this question was identical to the analysis method used to address research question 3 and the two sample T-test procedure was again used. The first population and sample refers to CONUS based Superintendents and the second population and sample refers to overseas based Superintendents. The null and alternate hypotheses used in this analysis were as follows:

$$Ho: \mu_1 - \mu_2 = 0$$

$$Ha: \mu_1 - \mu_2 \neq 0$$

where

μ_1 = mean of first population

μ_2 = mean of second population

The null hypothesis states that for a particular task, the difference between the mean values of time spent by CONUS and overseas based Superintendents is zero. The alternate hypothesis states that the difference between the mean times are not equal to zero.

IV. Results and Analysis

Introduction

This chapter presents the results and analysis of the SPSS subroutines used to address each research question. The subroutines used were FREQUENCIES, T-TEST, and FACTOR. The results presented in this chapter include an analysis of the background questions of Section I of the survey questionnaire in addition to an analysis of the time and importance portions of Section II of the survey questionnaire.

Return Rate

A total of 261 surveys were mailed to CONUS and overseas Superintendents. Of these, 184 surveys were returned for an overall return rate of 70.5 per cent. Of the 184 surveys returned, 32 were eliminated because they were filled out by people other than Superintendents, for example; airfield manager, deputy field engineer, heavy equipment trainer, etc. Also, 19 of the 32 eliminated surveys were filled out by Chiefs of Planning. Of the remaining surveys, 7 were eliminated since they were incompletely filled out. The remaining 145 surveys were used for the analysis. The overall return rate of the usable surveys was 55.6 per cent. A breakdown of survey return rates by CONUS and overseas based Superintendents is shown in Tables 4.1 and 4.2.

Table 4.1

Return Rate of Survey Respondents For
CONUS versus Overseas Based Superintendents

	Number Sent	Number Returned	Percent
CONUS Based	218	125	57.3
Overseas Based	43	20	46.5

Table 4.2

Return Rate of Survey Respondents For
Civilian versus Military Superintendents

	Number Sent	Number Returned	Percent
Civilian	125	66	52.8
Military	136	79	58.1

Background Data

This portion of the questionnaire differed slightly for military and civilian Superintendents. Military Superintendents were asked 10 background questions while civilian Superintendents were asked 8 background questions. The principle areas of interest for this research were the respondent's rank, years as a Superintendent, years with the Air Force, hours worked per week, branch, and major air command. The responses to those areas are presented below.

Tables 4.3 and 4.4 show the respondents by rank. Noteworthy here is the large number of high ranks. Over 90 percent of the military respondents were in the top two enlisted grades while over 90 percent of the civilian respondents were in the grade of WS-11 or higher.

Tables 4.5 and 4.6 show the respondents by years as a Superintendent. Of interest here is the large amount of experience that the respondents possess. Almost 60 percent of the military respondents have been Superintendents for over six years, while over 45 percent of the civilian respondents have been Superintendents for over six years.

Tables 4.7 and 4.8 show the respondents by years in the Air Force. Once again, the high experience level is reflected with over 78 percent of military respondents, and over 60 percent of civilian respondents having more than 20 years of service with the Air Force.

Tables 4.9 and 4.10 show the respondents by hours worked per week. Noteworthy here is the amount of dedication shown

Table 4.3

Military Respondents by Rank

	Number	Percent
Chief Master Sergeant	65	82.3
Senior Master Sergeant	6	7.6
Master Sergeant	7	8.9
Technical Sergeant	1	1.3

Table 4.4

Civilian Respondents by Rank

	Number	Percent
WS-9	2	3.0
WS-10	3	4.5
WS-11	5	7.6
WS-12	18	27.3
WS-13	25	37.9
WS-14	12	18.2
WS-15	1	1.5

Table 4.5

Military Respondents by
Years as a Superintendent

	Number	Percent
0-1 Year	5	6.3
2-3 Years	12	15.2
4-5 Years	15	19.0
6-8 Years	29	36.7
9+ Years	18	22.8

Table 4.6

Civilian Respondents by
by Years as a Superintendent

	Number	Percent
0-1 Year	14	21.2
2-3 Years	11	16.7
4-5 Years	11	16.7
6-8 Years	7	10.6
9+ Years	23	34.8

Table 4.7

Military Respondents by
Years in the Air Force

	Number	Percent
11-13 Years	1	1.3
14-16 Years	3	3.8
17-20 Years	13	16.5
20+ Years	62	78.5

Table 4.8

Civilian Respondents by
Years with the Air Force

	Number	Percent
6-8 Years	1	1.5
9-11 Years	3	4.5
12-15 Years	10	15.2
16-20 Years	12	18.2
20+ Years	40	60.6

Table 4.9

Military Respondents by
Hours Worked per Week

	Number	Percent
0-40 Hours	2	2.5
41-45 Hours	16	20.3
46-50 Hours	40	50.6
51-55 Hours	12	15.2
56-60 Hours	8	10.1
60+ Hours	1	1.3

Table 4.10

Civilian Respondents by
Hours Worked per Week

	Number	Percent
0-40 Hours	32	48.5
41-45 Hours	21	31.8
46-50 Hours	9	13.6
51-55 Hours	3	4.5
60+ Hours	1	1.5

by both groups of respondents. Over 98 percent of military respondents and over 50 percent of civilian respondents put in more than 40 hours of work per week.

Tables 4.11 and 4.12 show the branch and major air command of civilian and military Superintendents combined.

Managerial Tasks

The questionnaire surveyed thirty-four managerial tasks. Respondents were asked to respond with the amount of time spent each week on each task, and the relative importance of each task. The tasks surveyed were as shown in Table 4.13

Analysis

Research Question 1.

> "What types of managerial tasks do CE Superintendents spend most of their time engaged in?"

This research was concerned with Henry Mintzberg's ten managerial roles or tasks. Each of Mintzberg's ten managerial roles was represented by the specific tasks as shown in Table 4.14. Table 4.14 presents the mean times per week spent on each of the tasks and also a composite time calculated for each of the broad managerial roles. The composite score represents the average value of all the mean times for the tasks under each managerial role. The composite scores ranged from a low value of 1.030 hours per week to a high value of 3.964 hours per week.

Table 4.11

All Respondents by Branch

	Number	Percent
Structures	30	20.7
Mechanical	36	24.8
Electrical	34	23.4
Pavements and Grounds	30	20.7
Sanitation	15	10.3

Table 4.12

All Respondents by MAJCOM

	Number	Percent
SAC	13	9.0
TAC	42	29.0
MAC	29	20.0
ATC	19	13.1
AFLC	11	7.6
AFSC	7	4.8
AAC	3	2.1
PACAF	5	3.4
USAFE	12	8.3
AU	1	0.7
SPACE	3	2.1

Table 4.13

Managerial Tasks from Survey Questionnaire

Task Number	Task
1	Allocating resources among your subordinate sections
2	Speaking or communicating formally on behalf of your subordinate sections
3	Sifting through large amounts of information or correspondence and making decisions regarding their value and importance
4	Initiating or recommending changes or new ways for your section or the squadron in general to operate
5	Representing your section or the squadron in negotiations with other organizations
6	Making decisions to settle disputes among your subordinates
7	Interacting or communicating with other managers or Superintendents
8	Reviewing shop schedules to insure that problems are caught and solved before they reach crisis proportions
9	Participating in matters which are ceremonial in nature and are required due to your position
10	Making quick decisions and solving problems in a crisis-like situation
11	Analyzing information as to their value and passing on important items to your subordinates
12	Attending facility dedication ceremonies

Table 4.13 Continued
Managerial Tasks from Survey Questionnaire

Task Number	Task
13	Applying your expertise and experience in matters pertaining to the leadership and direction of your subordinate sections
14	Attending awards ceremonies of your subordinates
15	Meeting with the Chief of Planning or with other planners to provide support for facility and system surveys
16	Conducting formal inspections of your shops
17	Directly supervising and/or advising foremen and controllers under you
18	Monitoring subordinate's performance to insure that workforce practices emphasize efficiency and quality control
19	Reviewing and authorizing your section's equipment and material purchases.
20	Meeting with other Superintendents to discuss the status of jobs or to discuss problems
21	Seeking solutions to such problems as: -inadequate vehicles and/or transportation -material shortages or inadequacies -inadequate planning for jobs
22	Insuring that all equipment and material purchases reflect efficiency and are the best choice for a particular application
23	Giving briefings or answering questions of the BCE or Wing Commander regarding the progress of special interest projects

Table 4.13 Continued
Managerial Tasks from Survey Questionnaire

Task Number	Task
24	Meeting with memhbers of DEE (engineering and environmental planning) to discuss equipment maintenance and/or other support matters
25	Reviewing memos, letters, and computer products and making determinations regarding their importance and value
26	Reviewing information regarding equipment, materials, or product reliability and quality, and determining its value for your section
27	Performing training when needed and reviewing the training needs of your subordinates
28	Conducting meetings with your foremen to pass on important and/or current information
29	Circulating memos around your shops or posting notices containing important information on bulletin boards
30	Answering to the Chief of Operations regarding the actions of shops and/or workers under your supervision
31	Acting in behalf of your section when unfair or improper decisions are proposed
32	Elevating matters or "fighting" for items which you and your section desire or believe in
33	Making decisions regarding emergency situations, i.e., power outlays, water-line breaks, etc.
34	Reviewing and evaluating your subordinate's APR's or JPAS

Table 4.14
Specific Tasks for Mintzburg's Managerial Roles

Role	Mean	Composite
LEADER		3.964
Task No. 13	5.376	
16	2.610	
17	4.776	
34	3.093	
DISSEMINATOR		3.184
Task No. 3	5.269	
28	2.538	
29	1.645	
ENTREPRENEUR		3.082
Task No. 4	2.510	
8	3.434	
18	4.059	
21	3.248	
22	2.159	
LIAISON		2.946
Task No. 7	5.148	
15	1.945	
20	3.024	
24	1.666	
MONITOR		2.701
Task No. 11	3.355	
25	2.928	
26	1.821	
DISTURBANCE HANDLER		2.587
Task No. 6	1.790	
10	3.538	
33	2.434	

Table 4.14 Continued

Specific Tasks for Mintzburg's Managerial Roles

Role		Mean	Composite
SPOKESMAN			2.369
Task No.	2	2.538	
	23	1.745	
	30	2.824	
RESOURCE ALLOCATOR			2.351
Task No.	1	2.928	
	19	2.172	
	27	1.952	
NEGOTIATOR			2.037
Task No.	5	2.031	
	31	1.738	
	32	2.341	
FIGUREHEAD			1.030
Task No.	9	1.490	
	12	0.321	
	14	1.279	

Factor analysis was performed to determine if interrelationships other than the ten roles existed. As covered in chapter 3, factor analysis is an iterative process. For this part of the analysis, at least six iterations were tried. The number of factors were varied as well as the number of variables. Variables with little or no correlation and variables that did not "fit" into the groupings were eliminated. After several iterations, the results shown in Table 4.15 were obtained. The 26 tasks broke down into six roles or factors; tracking information, formal representative, leader, tending to subordinate's needs, disturbance handler, and coordinator. As was covered earlier, inferred factors were assumed. The tasks that made up each of the six factors were related and there was an underlying relationship under each of the six roles. For example, the leader role obtained through factor analysis, contained tasks number 13, 17, 18, and 19. Tasks 13 and 17 were under Mintzberg's leader role while task 18 was under Mintzberg's entrepreneur role and task 19 was under Mintzberg's resource allocator role. Tasks 18 and 19 dealt with monitoring subordinate's performance and authorizing equipment and material purchases, respectively. It can easily be seen that these tasks are among those that are typically performed by a leader or a superior. Thus, together with tasks 13 and 17, they were called the leader role. In a similar manner, all six factors were analyzed and named. Some of the roles obtained through factor analysis

Table 4.15

Factor Analysis of Time Spent Per Week on Managerial Roles

Role		Mean	Composite
LEADER			4.094
Task No.	13	5.367	
	17	4.776	
	18	4.059	
	19	2.172	
COORDINATOR			3.733
Task No.	3	5.269	
	7	5.148	
	9	1.490	
	20	3.024	
DISTURBANCE HANDLER			2.587
Task No.	6	1.790	
	10	3.538	
	33	2.434	
TRACKING INFORMATION			2.329
Task No.	22	2.159	
	25	2.928	
	26	1.821	
	29	1.645	
	34	3.093	
TENDING TO SUBORDINATE'S NEEDS			2.135
Task No.	4	2.510	
	27	1.952	
	31	1.738	
	32	2.341	
FORMAL REPRESENTATIVE			1.985
Task No.	2	2.538	
	5	2.031	
	15	1.945	
	23	1.745	
	24	1.666	

were similar to Mintzberg's roles. Table 4.15 also shows the mean times of all the sub-tasks that were under each role or factor, and also a calculated composite value. The composite values were calculated in the same manner as previously mentioned. The composite values for the six roles ranged from a low of 1.985 hours per week to a high of 4.094 hours per week. It should be noted that the times are more of a relative value than an absolute value. For example, 4.094 hours per week might not necessarily indicate the amount of hours per week spent on a task, but might instead be an indication that considerably more time is spent on that particular task than another one with a smaller value. Thus, the reader is cautioned about making too many general conclusions with regards to the time values. It is felt that they are more a relative indicator than an absolute value.

From the first part of the analysis, the Superintendents spent the most time performing Mintzberg's leader role, disseminator role, and entrepreneur role. Based on the factor analysis portion of the analysis, the Superintendents spent the most time performing the leader role, coordinator role, and disturbance handler role. These roles based on the factor analysis were very similar to some of Mintzberg's roles but were not identical. As was mentioned earlier, in naming and assessing these roles, an effort was made to account for all the sub-tasks under each factor and to name the factor or role in the most obvious and logical manner.

In both analysis methods, the leadership role came out

on top. Superintendents by far, spent the most time guiding and supervising their subordinate sections. In the first analysis method, the disseminator role came second. Based on the factor analysis, the coordinator role came second. Both these roles are similar. Both deal with the transfer of information from within and from without the Superintendent's jurisdiction. In the first analysis method, the entrepreneur role was third, while in the factor analysis method, the distrubance handler role was third. In this case, the sub-tasks in the disturbance handler role based on factor analysis were identical to the sub-tasks in Mintzberg's disturbance handler role. In both analysis methods, the figurehead or formal representation role was last. In both cases, Superintendents spend very little time acting in a formal capacity.

Thus, the Superintendent as a mid-level manager, can be said to spend most of his time leading and supervising his subordinates, obtaining and passing out pertinent information, and seeking out ways to solve his unit's problems and ways to operate his subordinate sections more efficiently. The Superintendent can be considered to spend the least amount of time performing the figurehead or formal representative role. This is not too surprising since the figurehead or formal representative role is most often performed by higher level managers. For example, the Base Civil Engineer or the Chief of Operations would most likely represent the squadron at ceremonies or in negotiations. As

mid-level managers, the Superintendents are more concerned with the day-to-day operations of their subordinate sections.

Research Question 2.

> "Which tasks do Superintendents consider important to the overall success of their jobs?"

This research question addressed the importance of each of the thirty-four tasks. Table 4.16 shows the importance of the tasks grouped according to Mintzberg's ten managerial roles. The composite value was again calculated by taking the average of the mean values of the importance of each of the tasks under a particular managerial role. The composite scores ranged from a low of 1.563 to a high of 2.917 with the lower values indicating a higher level of importance.

Factor analysis was again performed to determine if interrelationships in importance, other than according to Mintzberg's ten roles, existed. The process was similar to the one conducted for research question 1. After several iterations, the results shown in Table 4.17 were obtained. The 23 tasks broke down into four roles or factors; leader, disturbance handler, tracking information, and formal communicator. Table 4.17 also shows the mean values of the importance of all sub-tasks that were under each factor and also the calculated composite value. The composite values ranged from a low of 1.850 to a high of 2.370. Once again, the roles based on factor analysis were very similar to some of Mintzberg's roles but were not identical. In naming and assessing these roles, an effort was again made to account

Table 4.16

Importance of Specific Tasks Under Each of Mintzberg's Managerial Roles

Role		Mean	Composite
DISTURBANCE HANDLER			1.563
Task No.	6	1.869	
	10	1.455	
	33	1.366	
LEADER			1.590
Task No.	13	1.400	
	16	2.007	
	17	1.566	
	34	1.385	
ENTREPRENEUR			1.719
Task No.	4	1.972	
	8	1.538	
	18	1.521	
	21	1.572	
	22	1.993	
NEGOTIATOR			1.788
Task No.	5	2.179	
	31	1.641	
	32	1.545	
LIAISON			1.878
Task No.	7	1.386	
	15	2.200	
	20	1.669	
	24	2.255	
RESOURCE ALLOCATOR			1.987
Task No.	1	2.269	
	19	1.952	
	27	1.738	
SPOKESMAN			2.076
Task No.	2	2.097	
	23	2.069	
	30	2.063	

Table 4.16 Continued

Importance of Specific Tasks Under Each of Mintzberg's Managerial Roles

Role		Mean	Composite
DISSEMINATOR			2.094
Task No.	3	2.414	
	28	1.434	
	29	2.434	
MONITOR			2.218
Task No.	11	1.917	
	25	2.441	
	26	2.297	
FIGUREHEAD			2.917
Task No.	9	3.007	
	12	4.014	
	14	1.731	

Table 4.17

Factor Analysis of Importance of Managerial Roles

Role		Mean	Composite
LEADER			1.850
Task No.	8	1.538	
	15	2.200	
	16	2.007	
	17	1.566	
	18	1.521	
	19	1.952	
	20	1.669	
	22	1.993	
	23	2.069	
	26	2.297	
	27	1.738	
	28	1.434	
	30	2.063	
FORMAL COMMUNICATOR			1.881
Task No.	2	2.097	
	5	2.179	
	33	1.366	
DISTURBANCE HANDLER			2.062
Task No.	6	1.869	
	9	3.007	
	14	1.731	
	31	1.641	
TRACKING INFORMATION			2.370
Task No.	3	2.414	
	24	2.255	
	25	2.441	

for all the sub-tasks under each role or factor and to address the factor in the most obvious and logical manner.

From the first part of the analysis, the three roles that Superintendents found most important to the overall success of their jobs were the disturbance handler role, the leader role, and the entrepreneur role. Of interest here is the fact that the disturbance handler role, ranked sixth in time spent, ranks number one in importance while the disseminator role, ranked second in time spent, ranked number eight in importance. The leader and entrepreneur roles both ranked in the top three of both time spent and importance.

From the factor analysis portion of the analysis, Superintendents found the leader, formal communicator, and disturbance handler roles most important to the overall success of their jobs. It should be noted that although these roles may have the same names as some of the other roles obtained through factor analysis in research question 1, they are different and for the most part, made up of different sub-tasks. They carry the same names because in most cases they describe similar actions. In this portion of the analysis, the leader role contained the largest number of sub-tasks with thirteen. One possible reason for this is that Superintendents may have interpreted many of the sub-tasks as leadership type tasks. For example, consider task 8:

> Reviewing shop schedules to insure that problems are caught and solved before they reach crisis proportions.

Although task 8 is under Mintzberg's entrepreneur role, it can easily be interpreted as a leadership task. Many of the sub-tasks are this way -- subject to a wide range of interpretations. Factor analysis is one way of providing a double check. Again, as with the time spent on each role, the factor analysis has correlated fairly strongly with the first analysis method. The leader role again comes out on top as the most important. The formal communicator role is second and the disturbance handler or crisis manager role is third.

This portion of the data provides a fairly consistent look at the Superintendent's job. It shows again that as a mid-level manager, the Superintendent is most concerned with the day to day operations of his subordinate shops. Solving the tough problems encountered by his subordinates during crisis situations and insuring that his subordinate shops are performing their jobs in the most efficient manner are the Superintendent's most important concerns.

Research Question 3.

> "Do the functions performed by Superintendents differ between civilian and military Superintendents?"

This research question determines whether the ten managerial roles differ in the amount of time spent performing them by military and civilian Superintendents. Table 4.18 shows the thirty-four specific tasks grouped according to Mintzberg's ten roles. The tasks for which the

Table 4.18

Mean Times of Mintzberg's Managerial Roles
For Civilian and Military Superintendents

Role		Civilian Supts.	Military Supts.	Comments*
LEADER				
	Task No. 13	5.159	5.557	
	16	2.750	2.494	
	17	5.000	4.589	
	34	2.288	3.766	a
DISSEMINATOR				
	Task No. 3	4.129	6.405	a
	28	2.515	2.557	
	29	1.462	1.798	
ENTREPRENEUR				
	Task No. 4	2.296	2.690	
	8	3.417	3.449	
	18	4.326	3.835	
	21	2.788	3.633	
	22	2.061	2.241	
LIAISON				
	Task No. 7	4.500	5.690	a
	15	2.076	1.835	
	20	2.629	3.354	a
	24	1.697	1.639	
MONITOR				
	Task No. 11	2.811	3.810	a
	25	2.417	3.354	a
	26	1.546	2.051	a
DISTURBANCE HANDLER				
	Task No. 6	1.561	1.981	
	10	3.515	3.557	
	33	2.591	2.304	

Table 4.18 Continued

Mean Times of Mintzberg's Managerial Roles
For Civilian and Military Superintendents

Role		Civilian Supts.	Military Supts.	Comments*
SPOKESMAN				
Task No.	2	2.530	2.544	
	23	1.818	1.684	
	30	2.894	2.766	
RESOURCE ALLOCATOR				
Task No.	1	3.068	2.810	
	19	2.303	2.063	
	27	1.962	1.943	
NEGOTIATOR				
Task No.	5	2.091	1.981	
	31	1.432	1.994	a
	32	1.947	2.671	
FIGUREHEAD				
Task No.	9	0.924	1.962	a
	12	0.417	0.241	
	14	1.205	1.342	

* a indicates that there is significant difference between the two means at the 0.05 confidence level.

mean times of civilian and military Superintendents differed significantly, are indicated in the comments.

The monitor role was the only role where all of the sub-tasks differed significantly between civilian and military Superintendents. The liaison role had two of four sub-tasks differ significantly, and four other roles had one sub-task significantly different. Therefore, only the time spent on the monitor role can be said to differ significantly between military and civilian Superintendents. While it is possible that the liaison role differs significantly, the data cannot be considered conclusive. None of the other roles can be said to differ significantly between civilian and military Superintendents.

The fact that the monitor role is the only role which differs significantly between the two groups is somewhat surprising. There is no obvious reason why this should be. The questions in the survey did not address any particular military items. It addressed general information items such as memos and computer print-outs. There is no real reason why military Superintendents should spend more time screening such items and passing on important bits of information to their subordinates than their civilian counterparts. However, the data does indicate that this is the case. Thus, one can conclude that in all respects but one, civilian and military Superintendents spend an equal amount of time performing various aspects of their jobs. The one significant aspect is that military Superintendents are

perhaps more aware of information and its importance to their subordinates than are civilian Superintendents.

Research Question 4.

> "Do the functions performed by Superintendents differ between CONUS and overseas based Superintendents?"

This research question is similar to the preceeding one. It looks at Mintzberg's ten managerial roles and how the time spent performing them differs between CONUS and overseas based Superintendents. As indicated in Table 4.1, the amount of overseas based returns was comparatively small in relation to the CONUS based returns. However, the two sample T-test used to analyze research question 4 is adequate when one of the sample sizes is small as long as both populations are normal (5:287). When the two population variances are equal, the two-sample T-test using the pooled variance estimator is a very good test. When the two population variances are not equal, the Smith-Satterthwaite version of the two-sample T-test presented in Chapter 3, though not as strong or robust as the first version, will still yield adequate results (5:292). Therefore, the data from the overseas based Superintendents was used and the results obtained for research question 4 were considered good. Table 4.19 shows the thirty-four specific tasks grouped under Mintzberg's ten managerial roles. The tasks for which the mean times differed significantly between CONUS and overseas based Superintendents are indicated in the comments.

None of the ten managerial roles had all its sub-tasks differ significantly between the two groups. Thus, none of the ten roles can be said to differ significantly between CONUS and overseas based Superintendents.

It is not surprising that none of the roles differed significantly between CONUS and overseas based Superintendents. In the present peace-time Air Force, there is very little or no difference between the job requirements of a CONUS base or an overseas base. Day to day maintenance and repair work is conducted at both groups of bases, as is training for wartime missions. The command structure is similar at both CONUS and overseas bases and the number of subordinate sections and personnel should not differ to any great extent. There is no logical reason why any of the roles should differ and the data substantiates this -- none of the mean times spent on the roles differed significantly for CONUS and overseas based Superintendents.

Table 4.19

Mean Times of Mintzberg's Managerial Roles
For CONUS and Overseas Based Superintendents

Role		CONUS Based	Overseas Based	Comments*
LEADER				
	Task No. 13	5.152	6.775	
	16	2.724	1.900	a
	17	4.780	4.750	
	34	2.792	4.975	a
DISSEMINATOR				
	Task No. 3	5.380	5.300	
	28	2.588	2.225	
	29	1.700	1.300	
ENTREPRENEUR				
	Task No. 4	2.520	2.450	
	8	3.504	3.000	
	18	4.020	4.300	
	21	3.112	4.100	
	22	2.148	2.225	
LIAISON				
	Task No. 7	5.156	5.100	
	15	1.980	1.725	
	20	2.964	3.400	
	24	1.628	1.900	
MONITOR				
	Task No. 11	3.364	3.300	
	25	2.980	2.600	
	26	1.864	1.550	
DISTURBANCE HANDLER				
	Task No. 6	1.744	2.075	
	10	3.596	3.175	
	33	2.588	1.475	a
SPOKESMAN				
	Task No. 2	2.652	1.825	
	23	1.696	2.050	
	30	2.924	2.200	a

Table 4.19 Continued

Mean Times of Mintzberg's Managerial Roles
For CONUS and Overseas Based Superintendents

Role		CONUS Based	Overseas Based	Comments*
RESOURCE ALLOCATOR				
Task No.	1	3.036	2.250	
	19	2.244	1.725	a
	27	1.924	2.125	
NEGOTIATOR				
Task No.	5	2.020	2.100	
	31	1.780	1.475	
	32	2.460	1.600	a
FIGUREHEAD				
Task No.	9	1.464	1.650	
	12	0.348	0.150	
	14	1.252	1.450	

* a indicates that there is significant difference between the two means at the 0.05 confidence level.

V. Conclusions and Recommendations

Introduction

This chapter provides a discussion of the conclusions drawn from this research. The limitations of the research and some recommendations for future research are also addressed.

Limitations

As mentioned earlier, there were problems with the sample caused by the Superintendent's AFSCs. An examination of the rank distribution indicated that the sample was skewed to the upper areas of the population. For example, of the 79 military responses, 65 or 82.3 percent were from Chief Master Sergeants. However, the author believes that this skewed sampling did not affect the results to any great degree. For example, it is not likely that a Superintendent who is a Master Sergeant will perform a job much different than a Chief Master Sergeant. In any event, this matter should be taken into consideration prior to any decision-making based on the results of this thesis.

Conclusions

The conclusions presented in this chapter are based on the assumption that the data received from the 145 respondents was not significantly different from data which would have been receive from a 100 percent census of Civil Engineering Superintendents. This is valid for two reasons. First, as was mentioned above, although the sample seemed to

be skewed, it should not affect the results to any large extent and second, the sample size of 145 responses was large enough to indicate an adequate sampling.

The conclusions drawn from this research are as follows:

1. CE Superintendents, as mid-level managers, spend the largest amount of their time performing Mintzberg's leader, disseminator, and entrepreneur roles, in that order. Specifically, CE Superintendents spend most of their time leading and directly supervising their subordinates, obtaining and passing out pertinent and important information, and seeking out innovative and creative ways for their subordinate sections to operate more efficiently and effectively.

2. CE Superintendents find Mintzberg's disturbance handler, leader, and entrepreneur roles most important to the overall success of their jobs. Specifically, CE Superintendents found such tasks as leading and directly supervising their subordinates, solving problems in a crisis-like situation, and thinking up innovative and creative ways for their sections to run more effectively and efficiently, to be most important to the successful completion of their jobs.

3. Military Superintendents spent significantly more time performing Mintzberg's monitor role than their civilian counterparts. Specifically, military Superintendents spent more time being exposed to information and making judgements as to its value to subordinates than civilian

Superintendents.

4. There is no significant difference in the time spent on each of the roles between CONUS and overseas based Superintendents.

Recommendations

Further research is needed before any changes to the Superintendent position are made. As was mentioned earlier, this research was intended as a starting point for future changes to the Superintendent position. This research has begun to answer the question of what a Superintendent does. However, before any future changes are made, consideration must be given to the question of how to accomplish what the Superintendent does more efficiently. This research indicated that the Superintendent spends some amount of time on all of Mintzberg's ten managerial roles. The top roles corresponded very strongly when comparing time spent and importance. The Superintendent spent the most time performing the roles that were most important to him. This fact was borne out both by the analysis of Mintzberg's roles and the roles obtained through factor analysis. In all cases, the leader role finished at or near the top of the list. The Superintendent's greatest contribution is as a leader of his subordinate shops. The top roles in all areas clearly indicate this. He is concerned with leading his subordinates, keeping information channels open to them, and communicating their needs and desires. On the otherhand, the

Superintendent spends the least amount of time performing Mintzberg's figurehead and negotiator roles. This was borne out again by both the analysis of Mintzberg's roles and the roles obtained through factor analysis. Clearly, the Superintendent is not at his best when forced to act as a politician. Such functions are usually left to personnel of higher rank.

There were two interesting inconsistencies that merit some discussion. One was the fact that the disturbance handler role, ranked sixth in time spent, ranked first in importance. Another interesting fact was that the negotiator role, ranked ninth in time spent, jumped to fourth in importance. These two items are interesting because of what they point out. First, although relatively little time is spent on the disturbance handler role, the Superintendent found it extremely important to his job. Second, although relatively very little time is spent on the negotiator role, the Superintendent found it fairly important to his job. This seems to further solidify leadership as the Superintendent's primary contribution. The data indicates that the Superintendent spends fairly little time responding the crisis situations but find such responses extremely important. When problems arise that the shop personnel or Foremen cannot handle, the Superintendent, as a leader, must be able to step in and resolve the problem. Perhaps such instances are rare, however, when they do happen, the Superintendent provides a vital leadership role. Similarly,

the data indicates that the Superintendent spends very little time speaking on behalf or fighting for their subordinate sections, but again, find such tasks fairly important to their jobs. As a leader, the Superintendent must be able and willing to fight for and stand up for their subordinates. Even though such instances may again be rare, when they do occur, they are important.

Thus, it is easy to see that the Superintendent fills a need for mid-level leadership. Before any changes are made, this leadership requirement must be addressed. Providing such key leadership other than through the Superintendent will be very difficult. While on the surface the mechanics of the job could be done by others, the leadership that the Superintendent provides is invaluable. For example, Shop Foremen could monitor information for their subordinates and the Chief of Operations could speak for the shops, but the leadership needs are far too great to be absorbed by others. To try to do so would overburden the Chief of Operations or overextend the Shop Formen.

The question of efficiency also needs to be addressed further. This research provided an insight into what a Superintendent does and what he finds most important to his job. It is the authors opinion that the Superintendent position cannot and, furthermore, should not be deleted. The leadership that Superintendents provide, more than likely cannot be obtained any more efficiently by a change in organizational structure. Further, the Superintendent

position provides the only mid-level management job for senior NCOs and equivalent civilians. Deleting the position would severely hurt the career progression for these individuals. Perhaps further research will be able to provide more insight into these areas. In any case, the Superintendent plays a vital role in the leadership and operations of a CE squadron, any changes will have to insure that this leadership need is met.

Finally, action needs to be taken to address the problems encountered with the Superintendent's AFSCs. Although this is not directly in the scope of this research, it is nonetheless an important and disturbing problem and needs to be addressed. If the Air Force Manpower Standard 44X0 is correct, then all Superintendents should be assigned the proper AFSCs. This type of standardization would be an excellent change and would greatly simplify personnel changes or permanent change of station moves. Further, the Superintendent, as the highest enlisted or civilian equivalent manager in the Operations Division, deserves to be recognized with a separate AFSC other than that which is assigned to other shop personnel.

Appendix A: Survey Package

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6583

9 MAY 1985

REPLY TO ATTN OF: LS (Capt Muraoka, AV 785-6569)

SUBJECT: Superintendent Job Analysis Survey Package

TO: All Superintendents

1. Please take the time to complete the attached questionnaire and return it to us in the enclosed envelope within 5 working days.

2. The survey measures the amount of time you spend performing, and the relative importance that you assign to various management tasks. The data we gather will become part of an AFIT research project and may influence job design if any significant problems are discovered. Individual responses will be combined with others and will not be attributed to you personally.

3. Your participation is completely voluntary but we would certainly appreciate your help.

LARRY L. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

USAF Survey Control Number 85-45A

AIR FORCE — A GREAT WAY OF LIFE

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6583

9 MAY 1985

REPLY TO ATTN OF: LS (Capt Muraoka, AV 785-6569)

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3. Your participation is completely voluntary but we would certainly appreciate your help.

LARRY L. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

USAF Survey Control Number 85-45B

AIR FORCE — A GREAT WAY OF LIFE

I. Background Information

This section is designed to obtain background information. Please circle the response that best corresponds to you.

1. My rank is:
   a. Chief Master Sergeant
   b. Senior Master Sergeant
   c. Master Sergeant
   d. Technical Sergeant
   e. Other Please specify:_____

2. I have been a Superintendent for:
   a. 0-1 year
   b. 2-3 years
   c. 4-5 years
   d. 6-8 years
   e. 9 or more years

3. I have been in the CE career field for:
   a. 0-10 years
   b. 11-13 years
   c. 14-16 years
   d. 17-20 years
   e. more than 20 years

4. I have been in the Air Force for:
   a. 0-10 years
   b. 11-13 years
   c. 14-16 years
   d. 17-20 years
   e. more than 20 years

5. I am the Superintendent of:
   a. Structural Branch
   b. Mechanical Branch
   c. Electrical Branch
   d. Pavements and Grounds Branch
   e. Sanitation Branch
   f. Other Please specify:_____

6. Including this assignment, I have been a Superintendent at:
   a. 1 base
   b. 2 bases
   c. 3 bases
   d. 4 bases
   e. more than 4 bases

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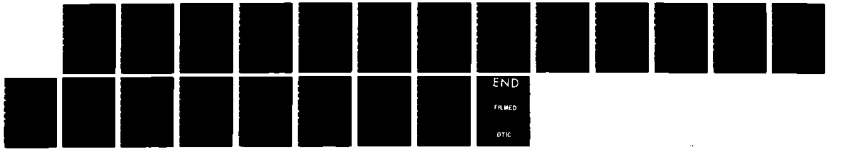
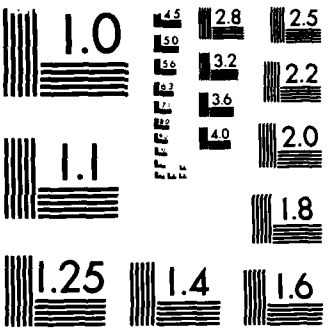
UNCLASSIFIED SEP 85 AFIT/GEM/LSM/85S-17 F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

7. In a typical week, I work:
   a. 0-40 hours
   b. 41-45 hours
   c. 46-50 hours
   d. 51-55 hours
   e. 56-60 hours
   f. more than 60 hours

8. My highest level of formal education is:
   a. High school graduate
   b. Some college courses
   c. Associate degree
   d. Bachelor's degree
   e. Master's degree
   f. Other Please specify:_____

9. My highest level of PME is:
   a. NCO Leadership School
   b. NCO Academy
   c. Senior NCO Academy
   d. Other Please specify:_____

10. My MAJCOM is:
   a. SAC
   b. TAC
   c. MAC
   d. ATC
   e. AFLC
   f. AFSC
   g. Other Please specify:_____

I. Background Information

This section is designed to obtain background information. Please circle the response that best corresponds to you.

1. My rank is:
   a. WS 10
   b. WS 12
   c. WS 13
   d. WS 14
   e. WS 15
   f. Other Please specify:_____

2. I have been a Superintendent for:
   a. 0-1 year
   b. 2-3 years
   c. 4-5 years
   d. 6-8 years
   e. 9 or more years

3. I have worked for the Air Force for:
   a. 0-5 years
   b. 6-8 years
   c. 9-11 years
   d. 12-15 years
   e. 16-20 years
   f. more than 20 years

4. Prior to coming to work for the Air Force, I worked in the civilian sector for:
   a. 0-5 years
   b. 6-8 years
   c. 9-11 years
   d. 12-15 years
   e. 16-20 years
   f. more than 20 years

5. I am the Superintendent of:
   a. Structural Branch
   b. Mechanical Branch
   c. Electrical Branch
   d. Pavements and Grounds Branch
   e. Sanitation Branch
   f. Other Please specify:_____

6. In a typical week, I work:
   a. 0-40 hours
   b. 41-45 hours
   c. 46-50 hours
   d. 51-55 hours
   e. 56-60 hours
   f. more than 60 hours

7. My highest level of formal education is:
   a. High school graduate
   b. Some college courses
   c. Associate Degree
   d. Bachelor's Degree
   e. Some graduate courses
   f. Master's Degree
   g. Other Please specify:_____

8. The Major Air Command I am currently assigned to is:
   a. SAC
   b. TAC
   c. MAC
   d. ATC
   e. AFLC
   f. AFSC
   g. Other Please specify:_____

II. Job Analysis

This section is designed to determine the functions and nature of the Superintendent position. Each item represents a task or function and will require a two part response. Each item will be followed by two response scales. The left scale measures the amount of time you spend performing a particular task. Please use the following scale to respond to this part of each item.

a. I never perform this task.
b. I spend between 1-2 hours per week performing this type of task.
c. I spend between 3-4 hours per week performing this type of task.
d. I spend between 5-6 hours per week performing this type of task.
e. I spend between 7-8 hours per week performing this type of task.
f. I spend between 9-10 hours per week performing this type of task.
g. I spend more than 10 hours per week performing this type of task. Note: If you select this response, please provide an estimate of the actual hours in the space provided.

The scale on the right measures the relative importance that a task has in regards to the accomplishment of your overall job. Please use the following scale to respond to this part of each item.

a. This task is very important to the accomplishment of my overall job. There are few tasks which I consider more important.
b. This task is moderately important to the accomplishment of my overall job. Although there are other tasks which I consider more important, I feel that this task is of above average importance.
c. I have no strong feelings about this task. This task is of average importance to the overall completion of my job.
d. This task is of below average importance to the accomplishment of my overall job. There are only a few tasks which I consider to be less important.
e. This task is of well below average importance to the accomplishment of my overall job. This is one of the least important tasks for which I am responsible.

DIRECTIONS:
Please indicate your response for each scale by circling the appropriate letter.

EXAMPLE

Write memos and letters to other Superintendents and managers in my organization	a-b-c-d-e-f-g If "g", specify hours_____	a-b-c-d-e

The response "g" circled on the left column indicates that more than 10 hours per week is spent performing this type of task. The filled in response of 12 shows that 12 hours per week is spent performing this task. The response "b" circled on the right column indicates that this task is moderately important to the completion of the overall job and that there are other tasks which are more important.

Time Spent (per week)	Importance
a = 0 hours	a = very important
b = 1-2 hours	b = moderately imp.
c = 3-4 hours	c = average imp.
d = 5-6 hours	d = below ave. imp.
e = 7-8 hours	e = well below ave.
f = 9-10 hours	
g = more than 10 hrs. (provide estimate)	

	Time Spent (per week)	Importance
1. Allocating resources among your subordinate sections	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
2. Speaking or communicating formally on behalf of your subordinate sections, i.e., briefings or speeches	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
3. Sifting through large amounts of information or correspondence and making decisions regarding their value and importance	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
4. Initiating or recommending changes or new ways for your section or the squadron in general to operate	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
5. Representing your section or the squadron in negotiations with other organizations	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
6. Making decisions in order to settle disputes among your subordinates	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
7. Interacting or communicating with other managers or superintendents	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
8. Reviewing shop schedules to insure that problems are caught and solved before they reach crisis proportions	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e

Time Spent (per week)	Importance
a = 0 hours	a = very important
b = 1-2 hours	b = moderately imp.
c = 3-4 hours	c = average imp.
d = 5-6 hours	d = below ave. imp.
e = 7-8 hours	e = well below ave.
f = 9-10 hours	
g = more than 10 hrs. (provide estimate)	

	Time Spent (per week)	Importance
9. Participating in matters which are ceremonial in nature and are required due to your position	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
10. Making quick decisions and solving problems in a crisis-like situation	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
11. Analyzing information as to their value and passing on important items to your subordinates	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
12. Attending facility dedication ceremonies	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
13. Applying your expertise and experience in matters pertaining to the leadership and direction of your subordinate sections	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
14. Attending awards ceremonies of your subordinates	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
15. Meeting with the Chief of Planning or with the other planners to provide support for facility and system surveys	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e

Time Spent (per week)	Importance
a = 0 hours	a = very important
b = 1-2 hours	b = moderately imp.
c = 3-4 hours	c = average imp.
d = 5-6 hours	d = below ave. imp.
e = 7-8 hours	e = well below ave.
f = 9-10 hours	
g = more than 10 hrs. (provide estimate)	

	Time Spent (per week)	Importance
16. Conducting informal inspections of your shops	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
17. Directly supervising and/or advising foremen and controllers under you	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
18. Monitoring subordinate's performance to insure that workforce practices emphasize efficiency and quality control	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
19. Reviewing and authorizing your section's equipment and material purchases	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
20. Meeting with other Superintendents to discuss the status of jobs or to discuss problems	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
21. Seeking solutions to such problems as: -inadequate vehicles and/or transportation -material shortages or inadequacies -inadequate planning for jobs	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
22. Insuring that all equipment and material purchases reflect efficiency and are the best choice for a particular application	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e

Time Spent (per week)	Importance
a = 0 hours	a = very important
b = 1-2 hours	b = moderately imp.
c = 3-4 hours	c = average imp.
d = 5-6 hours	d = below ave. imp.
e = 7-8 hours	e = well below ave.
f = 9-10 hours	
g = more than 10 hrs. (provide estimate)	

	Time Spent (per week)	Importance
23. Giving briefings or answering questions of the BCE or Wing Commander regarding the progress of special interest projects	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
24. Meeting with members of DEE (engineering and environmental planning) to discuss equipment maintenance and/or other support matters	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
25. Reviewing memos, letters, and computer products and making determinations regarding their importance and value	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
26. Reviewing information regarding equipment, materials, or product reliability and quality, and determining its value for your section	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
27. Performing training when needed and reviewing the training needs of your subordinates	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
28. Conducting meetings with your foremen to pass on important and/or current information	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
29. Circulating memos around your shops or posting notices containing important information on bulletin boards	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
30. Answering to the Chief of Operations regarding the actions of shops and/or workers under your supervision	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e

Time Spent (per week)	Importance
a = 0 hours	a = very important
b = 1-2 hours	b = moderately imp.
c = 3-4 hours	c = average imp.
d = 5-6 hours	d = below ave. imp.
e = 7-8 hours	e = well below ave.
f = 9-10 hours	
g = more than 10 hrs. (provide estimate)	

	Time Spent (per week)	Importance
31. Acting in behalf of your section when unfair or improper decisions are proposed	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
32. Elevating matters or "fighting" for items which you and your section desire or believe in	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
33. Making decisions regarding emergency situations, i.e., power outlays, water-line breaks, etc.	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e
34. Reviewing and evaluating your subordinate's APR's or JPAS	a-b-c-d-e-f-g If "g" specify hours_____	a-b-c-d-e

OTHER TASKS: If there are tasks which you perform that were not mentioned, please write them in and rate them in the same manner as above.

_____	a-b-c-d-e-f-g	a-b-c-d-e
_____	If "g" specify hours_____	
_____	a-b-c-d-e-f-g	a-b-c-d-e
_____	If "g" specify hours_____	
_____	a-b-c-d-e-f-g	a-b-c-d-e
_____	If "g" specify hours_____	

8

Appendix B: Data

Military Superintendents:

ADEECBCCCBCBDABBCEBBCACABBBBCBBBABBBCBAB
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Civilian Superintendents:

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CEFAAABCBBDBBBFBBDBBCBBCDBBCBBBBBBBCBCBB
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CADCABBCBBCABBFCABCAFBACEDBAABBBBBBBBCAB
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This research provided a preliminary analysis of the Superintendent position in Air Force Civil Engineering. A survey was developed using specific tasks based on the work of Henry Mintzberg. Respondents were asked to provide the time spent on each task as well as the relative importance of each task. The data was then analyzed to determine how much time Superintendents spent on each of Mintzberg's ten roles and which roles were found to be most important by the Superintendents. The analysis indicated that Superintendents spent the most time performing a leadership role. They also found this role to be the most important to the overall success of their jobs. The analysis also indicated that the figurehead or ceremonial role was the least important and the least time consuming. There was also virtually no difference in the time spent on each of the roles between CONUS and overseas based Superintendents. Recommendations for implementation of this research and for further research were also presented. Key: Air Force Job Analysis, Management roles.

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