

A CASE STUDY OF LEADERSHIP AND MANAGEMENT
IN THE CONVENTIONAL AIR LAUNCHED
CRUISE MISSILE REPLENISHMENT
PROGRAM

By

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NOMENCLATURE

CALCM	Conventional Air Launched Cruise Missile
CMPG	Cruise Missile Product Group
DAC	Designated Acquisition Commander
IPT	Integrated Product Team
PGM	Product Group Manager

CHAPTER I

INTRODUCTION

Background

During the first week of 1999, the Chief of Staff of the Air Force tasked the Cruise Missile Product Group at Tinker Air Force Base in Oklahoma City to replenish the inventory of Conventional Air Launched Cruise Missiles. Remarkably, the Cruise Missile Product Group Team accomplished this task in only seven months. A more typical period of performance for a program of this scope and complexity would have been two years.

The Air Force direction to proceed with the Conventional Air Launched Cruise Missile Replenishment Program came on the heels of a military conflict in Iraq that consumed a large percentage of the Conventional Air Launched Cruise Missile inventory. In early January 1999, the missile inventory had been reduced to approximately 160 missiles. Then, during military operations in Kosovo in the spring of 1999, the missile inventory was further reduced to approximately 70 weapon systems. It was during this latter time frame that the Cruise Missile Product Group was directed to conduct the replenishment program in the shortest time possible.

The program strategy was to modify/convert excess Air Launched Cruise Missiles that were in a nuclear weapon configuration to a Conventional Air Launched Cruise Missile configuration – one that contained a blast/fragmentation warhead. The quantity of excess nuclear configured missiles that were made available for the conversion program was 322. The missile conversion process included the following activities:

1. Removal of the missiles from storage and shipment to the Boeing Company in St. Charles, Missouri
2. Structural refurbishment of the missile
3. Engine overhaul
4. Missile avionics upgrade and overhaul
5. Shipment to Sacramento, California to pour the conventional blast-fragmentation warhead
6. Shipment to the customer

However, none of the above missile conversion work could begin until the Cruise Missile Product Group received an Air Force Operational Requirements Document (ORD) for the missile. The ORD identified specific missile performance capabilities either required or desired to meet the Air Force operational need. Funding to support the contracting activity with industry was also required in advance. Additionally, the company selected to accomplish the missile conversion could not begin work until all required government documents including contractual instruments were completed. Historically, the lead-time to gain approvals from Congress and other senior OSD and Air

Force officials and to complete the necessary documentation prior to contract award for a program of this magnitude was lengthy.

In recent history, the military-industrial complex has been thrust into similar situations, mostly as preparatory measures leading to military contingency operations. Typically, war-planners and/or others responsible for ensuring military readiness saw a particular need for a new or modified system or capability and therefore attempted to expedite fielding of a new or modified weapon system or support capability. The events surrounding the Conventional Air Launched Cruise Missile Program were basically the same, however, the urgent need was the result of a diminished missile fleet following two military operations.

Although much research has been done in the leadership and management arena, very little has been done to study leadership and management and their influence on program management under very expedited conditions. This study considered leadership and the application of traditional management principles and other factors that may have contributed to the success of the Conventional Air Launched Cruise Missile Replenishment Program. The principles included planning, organizing, staffing, directing, and controlling. Peter Drucker said that people need to be adaptive to change:

An organization, which just perpetuates today's level of vision, excellence, and accomplishment, has lost the capacity to adapt. And since the one and only thing certain in human affairs is change, it will not be capable of survival in a changed tomorrow. (p. 581)

A common behavioral thread that is equally applicable to strong leadership and sound management principles is that of shared power. James Champy and Nitin Nohria in *The Arc of Ambition* (2000) said that power is derived from an ability to inspire others

and that people need each other to carry out their ambitions. United, people can achieve their shared ambitions (p. 165). The notion of shared power (empowerment) and many other human factors related to successful leadership and sound management principles by the men and women of the Cruise Missile Product Group were analyzed in this study.

Statement of the Problem

The successful execution of the Conventional Air Launched Cruise Missile Replenishment Program during 1999 was a noteworthy accomplishment in Air Force program management. Leadership, management and other factors may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Therefore, what leadership, management, and other factors contributed to the rapid execution of the Conventional Air Launched Cruise Missile Replenishment Program?

Purpose of the Study

The purpose of the study was to examine leadership, management and other factors during calendar year 1999 that contributed to the rapid accomplishment of program objectives and success of the Conventional Air Launched Cruise Missile Replenishment Program in only seven months. Insights gained from the study may provide a useful leadership and management resource for others in government and industry and serve as a basis for further research in the field of leadership and management.

Research Questions

The following research questions were answered by the study:

1. What were the leadership characteristics of the Cruise Missile Product Group?
2. How did the Cruise Missile Product Group leadership influence execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program?
3. How effectively were management principles, including planning, organizing, staffing, directing and controlling employed by the Cruise Missile Product Group?
4. How did management principles influence execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. What urgent need or other factors could have contributed to program success?

Assumptions

1. Research data collected during the interviews were candid opinions based in part on the anonymity of the respondent.
2. The leadership position of the author (Product Group Manager) had no significant influence on the research data provided by the subjects.

Scope of the Study

The scope of the study included selected members of the Conventional Air Launched Cruise Missile Team at the Tinker Air Force Base Air Logistics Center in Oklahoma City, Oklahoma and the senior Air Force officer to whom the Cruise Missile Product Group Manager reported.

Limitations

The findings of this study were limited to the Cruise Missile Product Group, other government and contract support personnel, and the Designated Acquisition Commander. Although the findings cannot be generalized to other populations, the conclusions and recommendations resulting from the study could provide valuable insights that would be beneficial to other organizations involved in similar intensive efforts.

Definitions

The following definitions were provided to aid in understanding:

Accelerated Program – The Air Force senior leadership directed the Cruise Missile Product Group to replenish the Conventional Air Launched Cruise Missile fleet in the most expeditious method that was available – unconstrained by cost.

Conventional Air Launched Cruise Missile (CALCM) – An inertially guided, global positioning system-aided subsonic missile. The air-to-ground conventionally armed missile weighed 3,250 pounds, was 249 inches in length, and had a diameter of 24.5 inches. The missile carried a 3,000 pound-class warhead, and was powered by an

air-breathing, turbofan engine. It was launched from a B-52H bomber aircraft and had a range in excess of 600 miles.

Core Team – Team members with various roles and responsibilities (military and government civilian) that were assigned to the Conventional Air Launched Cruise Missile Program on a full-time basis. The core team, which included the missile program manager, was responsible for the day-to-day execution of the missile program.

Cruise Missile Product Group (CMPG) – The U.S. Air Force organization responsible for support and modernization of the Air Force bomber launched, long-range cruise missile weapon systems. The Cruise Missile Product Group was located at Tinker Air Force Base in Oklahoma City, Oklahoma.

Designated Acquisition Commander (DAC) – The senior Air Force officer given oversight responsibility for weapon system acquisitions and/or support for a fielded weapon system.

Leadership – Leadership is about articulating visions, embodying values, and creating the environment within which things can be accomplished (Richards & Engle, 1986, p. 206).

Management – The organizing and controlling of the affairs of a business or a particular sector of a business (Encarta World English Dictionary).

Product Group Manager (PGM) – The senior military officer within the Cruise Missile Product Group at Tinker Air Force Base in Oklahoma City, Oklahoma. The Product Group Manager had program management responsibility for multiple missile weapon systems and weapon system support equipment.

Replenishment Program – The program office was directed to replenish the Conventional Air Launched Cruise Missile fleet by converting excess Air Launched Cruise Missiles that had been in extended storage. The excess missiles had previously been configured with nuclear warheads. The replenishment program consisted of 322 missiles.

Senior Leadership – The Designated Acquisition Commander, Product Group Manager, and Deputy Product Group Manager.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The successful execution of the Conventional Air Launched Cruise Missile Replenishment Program during 1999 stood-out as noteworthy accomplishment in Air Force project management. Leadership, management and other factors may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Therefore, a study to determine leadership, management, and other factors that may have contributed to the rapid execution of the Conventional Air Launched Cruise Missile Program was needed.

Purpose of the Study

The purpose of the study was to examine leadership, management and other factors during calendar year 1999 that contributed to the accomplishment of program objectives and success of the Conventional Air Launched Cruise Missile Replenishment Program in only seven months. Insights gained from the study may provide a useful leadership and management resource for others in government and industry and serve as a basis for further research in the field of leadership and management.

Research Questions

Specific interview questions were structured to collect data that would support the five broad research questions that were listed in Chapter I:

1. What were the leadership characteristics of the Cruise Missile Product Group?
2. How did the Cruise Missile Product Group leadership influence execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program?
3. How effectively were management principles, including planning, organizing, staffing, directing and controlling employed by the Cruise Missile Product Group?
4. How did management principles influence execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. What urgent need or other factors could have contributed to program success?

Not surprisingly, a review of the literature revealed a significant amount of common thinking regarding leadership and management. A common thread of thought concerning the difference between leadership and management appeared to be that managers tended to focus on near term objectives; the day-to-day operation of the organization, whereas leaders tend to focus more on long term or strategic concerns. Godwin (1998) differentiated leadership from management in this way:

Professional managers know the “ins and outs” of budgets, policies and procedures, but the subsequent bureaucracy stifles innovation, the company loses its edge and profitability ultimately suffers. (p. 10)

Certo (2000) defined leadership as the process of directing the behavior of others toward the accomplishment of some objective. Many agreed that leading was not synonymous to managing. In fact Certo contended that leadership, one of the four primary activities of the influencing function, is a subset of management (p. 326). The most effective managers in the long run are also leaders. That is because managers must focus on organizational processes (getting the job done); and leaders, because they tend to emphasize behavioral issues, demonstrate a genuine concern for workers as human beings (leadership). Covey in *Principle-Centered Leadership* (1991) wrote:

Leadership focuses more on people than on things; on the long term rather than the short term; on developing relationships rather than on equipment; on values and principles rather than on activities; on mission, purpose, and direction rather than on methods, techniques, and speed. (p. 270)

Kotter in *Leading Change* (1996) shared similar views with respect to differences between leadership and management. Kotter offered that management is a set of processes that facilitate the smooth operation of a business that is a complex system of people and technology. He listed planning, budgeting, organizing, controlling, and problem solving as the most important aspects of management. Conversely leadership, according to Kotter, not only consists of the processes that create organizations, but also defines what the future should look like for the organization. Leadership aligns people with organizational vision and inspires them to make it “happen” (p. 25). The key characteristics of leadership and management and the expected results of each are

summarized in Figure 1. Note the emphasis on people processes associated with leadership versus the organizational functions of management:

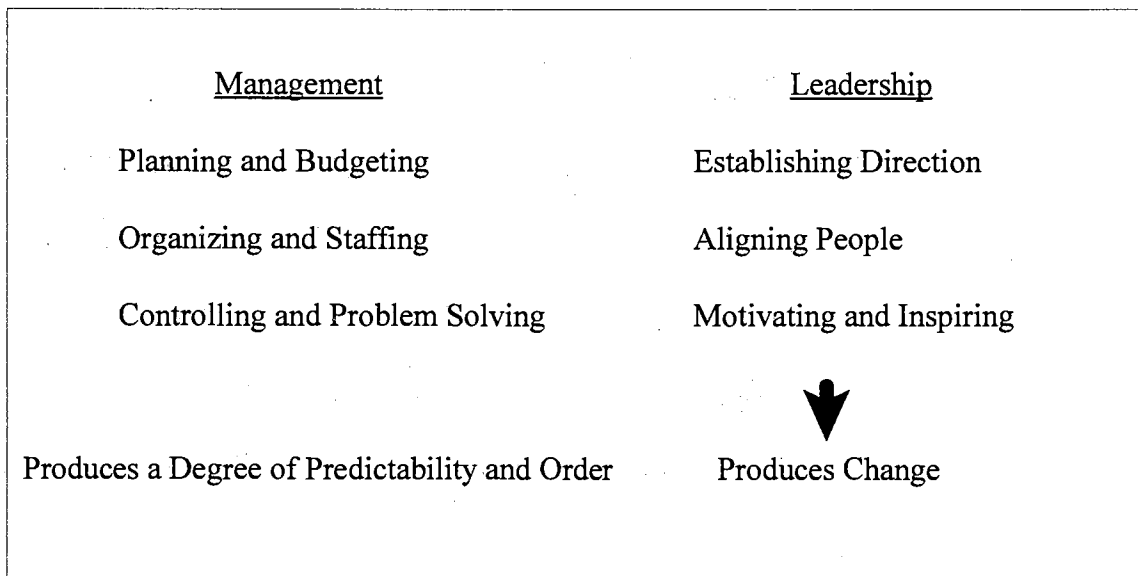


Figure 1. Key Characteristics of Management and Leadership and Expected Results. From Leading Change (p. 25), Kotter, (1996). Boston, MA: Harvard Business School Press.

Leadership

There is no precise, universal definition of leadership. Bennis in *Administrative*

Science Quarterly (1959 p. 259) made an observation in 1959 that is still true today:

Always, it seems, the concept of leadership eludes us or turns up in another form to taunt us again with its slipperiness and complexity. So we have invented an endless proliferation of terms to deal with it . . . and still the concept is not sufficiently defined.

Stogdill concluded in *Handbook of leadership: A survey of the literature* (1974, p. 259) that “there are almost as many definitions of leadership as there are persons who have attempted to define the concept.” The following are some representative definitions that have been offered during the past 50 years:

- Leadership is “the behavior of an individual . . . directing the activities of a group toward a shared goal” (Hemphill & Coons, 1957, p. 7).
- Leadership is “the influential increment over and above mechanical compliance with the routine directives of the organization” (Katz and Kahn, 1978, p. 528).
- Leadership is “the process of influencing the activities of an organized group toward goal achievement” (Rauch & Behling, 1984, p. 46).
- Leaders are those who consistently make effective contributions to social order and who are expected and perceived to do so (Hosking, 1988, p. 153).
- Leadership is a process of giving purpose (meaningful direction) to collective effort, and causing willing effort to be expended to achieve purpose (Jacobs & Jacques, 1990, p. 281).
- Leadership . . . is the ability to step outside the culture . . . to start evolutionary change processes that are more adaptive (Schein, 1992, p. 2).
- Leadership is the process of making sense of what people are doing together so that people will understand and be committed (Drath & Palus, 1994, p. 4).

- Leadership is about articulating visions, embodying values, and creating the environment within which things can be accomplished (Richards & Engle, 1986, p. 206).

Yulk in *Leadership in Organizations* (1998) said, “Most definitions of leadership reflect the assumption that it involves a process whereby intentional influence is exerted by one person over other people to guide, structure, and facilitate activities and relationships in a group or organization” (p. 3). The definitions appear to have little else in common.

Wheeler in *Leadership Lessons from the Civil War* (2000) noted that military history continues to be important for the lessons it teaches, especially the lessons regarding leadership (p. xiii). Wheeler suggested that capitalists should look for lessons from the rawest form of competition (war). Furthermore he said, “Just as Napoleon admonished his subordinates to seek out the lessons of the great campaigns, so too should business leaders learn from the experiences of battlefield leaders” (p. xiii). Recent literature on leadership and management highlighted the critical role that people play in accomplishing objectives and the importance of everyone to the success of corporate objectives.

Kouzes and Posner in *The Leadership Challenge* (1995) and Greenleaf in *Servant Leadership* (1991) took a fresh critical look at the concepts of power and authority and advised that people are beginning to relate to one another in less coercive and more creatively supporting ways. Greenleaf wrote that a new moral principle is emerging that conveys authority only to those that have proven themselves as trusted servants. More

specifically, those who choose to follow the new principle will freely respond to only the individuals who are chosen as leaders because they are proven and trusted as servants.

The Greenleaf theory contends that the great leader is seen as a servant first to the people that he or she leads (p. 10). Lundy in *Lead, Follow or Get Out of the Way* (1986)

remarked that leadership is not a function of titles. Leadership is a function of relationships (p. 36). Lundy's definition of leadership is very simple and straightforward:

“A leader is anyone who has followers.” Conversely, a person who has subordinates but no followers is not a leader but may instead be viewed as a manager of resources (p. 38).

Manz in *The Leadership Wisdom of Jesus* (1988) wrote about the compassion that Jesus had for people and how His caring for people related to leadership; or said another way, leading by serving others. The *Bible* contains many examples where Jesus empowered or encouraged people to lead themselves. Empowering others to lead is a leadership strength. It may in fact be very wise due to one's own area(s) of weakness.

Manz said:

In the end, the primary lesson seems to be that it is we who would lead who most need to see clearly our tendency toward blindness. We must carefully uncover and address our own vast failings and personal imperfections. In the process of completing such a self-examination, we may discover the importance of relying on any sightedness that is available. (p. 131)

Business institutions, according to Greenleaf (1991), have grown larger and much more complex and the pace of innovation is sometimes breathtaking:

Dealing with these conditions, large business leadership has become a sophisticated calling, and the leaders are much more concerned with building strength and bringing sharpness of focus to many people and building a dependable staff rather than with deciding everything themselves. (p. 140)

Similarly, Willingham in *The People Principle* (1997) provided some key factors that influence the empowerment of people. The factors were a compilation of plain talk about how leaders should actively engage with people in the organization:

- They must understand the objectives.
- They must understand the rules, values, and guidelines to stay within.
- They must take responsibility.
- You must give them freedom within certain limits to solve problems and make decisions.
- You must not beat them up when they make a wrong decision. It must become a learning experience.
- You must encourage your people to own each problem they encounter.
- You have to train and build your people, and then trust them to do the right thing.
- You must celebrate victories and growth.
- You must get cross-functional teams working on problems and objectives.
- You must help each person see how his or her role fits into the overall success of your organization (p. 165).

Feldman and Arnold in *Managing Individual and Group Behavior in Organizations* (1983) cited the research of Lewin, Lippitt and White that were carried-out at the University of Iowa (1939). The researchers focused on three types of leaders that were categorized according to their style of decision-making (p. 297). The three styles

included authoritarian, democratic, and laissez-faire. Feldman and Arnold offered some advantages to the democratic style of leadership:

Research on the effectiveness of these alternative styles indicated that the democratic leadership style appears most desirable (Lewin et al., 1939). Individuals under democratic leadership were more satisfied, had higher morale, were more creative, and had better relationships with their superiors. (p. 297)

Deming in *Out of the Crisis* (1986) offered some new principles of leadership.

Listed among his 14 principles for transforming management, Deming said that “The aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output, and simultaneously to bring pride of workmanship to people” (p. 248).

Neff and Citrin (1999) articulated Mike Armstrong’s principles of leadership.

Armstrong, CEO of AT&T, a 60 billion-dollar business, cited leadership as “five buckets.” The buckets were a defining idea (or vision), courage to be competitive, trust your team, embrace risk and commit to values (p. 14). Maxwell in *The 21 Irrefutable Laws of Leadership* (1998) summarized 21 “timeless laws” supported by unchanging leadership principles. In his law of empowerment, Maxwell used Henry Ford as an example of the antithesis of an empowering leader. For almost 21 years, Ford would not allow his designers to change the design of the Model T. Maxwell said that Ford always seemed to undermine his leaders. Indeed, the context of leadership is changing. Mc Gill and Slocum in *Organizational Dynamics* (Winter 1998) said:

Consistent with this new context, new models of leadership have emerged – models that are “non-positional,” team-based, or empowering. These new models call for new leader behaviors. Leaders who act as coaches, stewards, servants, or partners are seen as dramatically different from the

leaders of old who used the power of their position and/or their persona to exert their influence. (p. 40)

Barrier in *Nation's Business* (December 1998) revealed that an organization's leadership must develop a strategic vision and communicate it to the employees; otherwise, they don't feel as invested in what they're doing (p. 27). General Lester Lyles, Air Force Materiel Command Commander, provided his perspective regarding shared leadership and effective communication in an article written by Vanhook (2000): "The three word motto I've used in every one of my commands is 'communicate, communicate, communicate.'" Lyles also remarked:

As General Richard Myers, Vice Chairman of the Joint Chief of Staff said just the other day about me, I'm "always looking for and willing to find solutions to solve problems in working with people as opposed to dictating an answer or rejecting a solution." (p. 5)

Nanus and Dobbs in *Leaders Who Make a Difference* (1999) distinguished between the functions of leading and managing. The literature review transitions here from leadership to management principles, therefore, Nanus and Dobbs' views regarding the two functions are appropriate. The authors stated that leading and managing require two separate mind-sets and two different sets of skills:

Because managers are chiefly responsible for processes and operations, they are mostly interested in what needs to be done and how it can be accomplished. In contrast, the leader is concerned with strategies and direction, with where the organization should be headed and what it can and should be doing in the future (p. 8).

The inference here is that managers tend to be focused on the short term while leaders tend to focus mostly on broader and longer term challenges. Similarly, managers

work within near term constraints and leaders prefer flexibility and change to predictability and control (p. 9). However, Farr (2000) warns against getting caught up in the latest fad of turning everyone in the organization into a leader while bashing anything that resembles manager-like behavior (p. 1). Ideally, he said, you want to develop managers that can lead and leaders that can manage. Farr (2000) summarized his thoughts regarding development of one's leadership ability:

As your organization grows or changes, be entrepreneurial about developing your leadership skills so that they are deliberate, professional and based in self-awareness. Manage your leadership development. Don't take it for granted that what comes naturally or feels comfortable will always be good leadership. Remember, if people aren't following, you're not leading. (p. 3)

Hesselbein, Goldsmith, and Somerville in *Leading Beyond the Walls* (1999) added that "In order to prepare leaders for service in the public interest, public policy schools must provide graduates with skills that will help them address the impact of trends in diverse institutional settings" (p. 281). Teamwork is a frequently used word, but in practice, the goal often falls short of achievement. According to Wren and Greenwood in *Management Innovators* (1998), "Getting people to work together in pursuit of a common end is an ancient problem in military, religious, governmental, and economic endeavors." Barnard, a prominent executive in AT&T during the early 1900s, did not view organizations in terms of charts with lines and boxes that connected (p. 165). Barnard viewed organizations as the social process through which social actions are accomplished; if any organization fails, it can be traced to a failure to provide an opportunity for human cooperation. Barnard also said:

To compete effectively and survive, all enterprises need to maintain an internal harmony among physical, social, and human elements as well as to make adjustments to external forces that continuously fluctuate and affect the firm. (p. 165)

The Principles of Management

Koehler, Anatol, and Applbaum in *Organizational Behavior; Behavioral Perspectives* (1976) recognized the significance of economist Adam Smith's contribution in 1776 regarding the division of labor in improving efficiency (p. 11). But well beyond the early work of Adam Smith, three prominent contemporaries – Frederick Winslow Taylor, an American; Henri Fayol, a Frenchman; and Max Weber, a German; advanced classical organizational theory. Collectively, their lives spanned the period from the middle of the nineteenth century to World War I (p. 11). The basic theory to help explain why organizations work the way they do came to be known as *scientific management*. Koehler, et al., (1976) credited Frederick Taylor as the founder of the scientific management movement and many techniques such as time-and-motion studies. Taylor advanced the theory that the hypothetical “economic man” was motivated and controlled by fear and hunger and desire for gain (p. 11). The general flow of Taylor's work was to develop a true science of work; to use science in selecting and training and to gain cooperation between workers and management (p. 12). Stoner, Freeman, and Gilbert in *Management* (1995) more clearly summarized Taylor's philosophy that rested on four basic principles:

- The development of a true science of management
- The scientific selection of workers (best suited for the task)

- The scientific education and development of the worker
- Intimate, friendly cooperation between management and labor (p. 34)

Stoner, et al., (1995) acknowledged that Henri Fayol is generally recognized as the founder of the classical management school; he made the earliest attempts to identify the principles and skills that underlie effective management (p. 35). Koehler, et al., (1976) credited Fayol with the earliest attempts to understand the general laws of management (p. 13). Fayol identified five essential functions of management: planning, organizing, commanding, coordinating, and controlling. In addition, he applied the principle of specialization to management by defining “line,” “functional,” and “staff” positions. *Line* positions are those in the direct chain-of-command from the top of the organizational pyramid to the base; *functional* are those specialized positions (such as accounting) outside the direct chain-of-command; *staff* refers to the agents of the line or functional authority to which they are assigned (p. 14). Other key scientific management principles defined by Fayol, important in organizational theory include:

- Authority – a clear, recognized line from the top of the pyramid to each individual in the hierarchy
- Unity – each individual taking orders from and being responsible to one authority only
- Definition – all duties, responsibilities, and relationships being defined and published
- Correspondence – authority consistent with responsibility

- Span of control – specialization and subdivision of a particular responsibility held to a specific number of subordinates, usually five or six which one manager can supervise directly (p. 15).

German social philosopher Max Weber was also a major contributor to the theory of scientific management. Stoner, et al., (1995) wrote that Weber considered the ideal organization to be a *bureaucracy* whose activities and objectives were rationally thought-out and whole divisions of labor were explicitly spelled-out (p. 37). Koehler, et al., (1976) said, “He created the first fully articulated theory of authority structure in formal organizations” (p. 15). Weber focused on authority, and under what circumstances people are willing to respond. He concluded that people respond to authority when they are convinced that the person exercising it has the “right” to do so (p. 15). Weber described three basic “legitimizing” methods for achieving authority:

- Charismatic authority – It is legitimized by the personality of the individual exercising it. The charismatic individual is obeyed because of some extraordinary personal quality that carries a conviction of the right to give orders. This means that the charismatic authority tends to be a one-generation phenomenon.
- Traditional authority – It is derived through and sanctioned by custom. Succession to the traditional authority can be legitimized in a variety of ways, depending on the custom that is in force.
- Bureaucratic authority – It is legitimized by “rational-legal” means – that is, by established rules and regulations. Weber viewed bureaucracy as a

model of efficiency when compared to other forms of organization.

Among its superior features he noted precision, speed, unambiguity, continuity, discretion, unity, and strict subordination (pp.15-16).

Ducker in *Managing in a Time of Great Change* (1995) reminded us that management, as a practice, is very old when he said, “The most successful executive in all history was surely that Egyptian who, 4700 years or more ago, first conceived the pyramid – without any precedent – designed it and built it, and did so in record time” (p. 250). Stoner, et al., (1995) defined management as “The process of planning, organizing, leading, and controlling the work of organization members and of using all available organizational resources to reach stated organizational goals” (p. 7). Hoffman (1997) contended that supervisors (or managers) can – and often do – jeopardize their careers, and even those who report to them, by not listening, not reading, not learning and not growing into what their companies need to meet organizational goals (p. 1). Sawyer (1998) portrayed management as a large risk area but also a significant organizational value: “Poor management represents one of the greatest and most universal organizational risks, while effective management serves as one of the most significant controls in any enterprise” (p. 33).

Deveson (1997) said that one thing is absolutely certain: “The successful organizations of the future will be those that harness and develop all the skills of all the people that work there” (p. 6). The performance bar has been raised to the point where any approach to management and leadership must ensure the participation of all in determining and achieving goals.

Planning

Wells (1999) articulated the five functions of management and advised that “The management process begins with planning, which sets the stage for what the organization will do, both globally and specifically” (p. 231). Certo in *Modern Management* (2000) echoed the primacy of the planning function as described by Wells. Certo said that planning is the process of determining how the organization can get to where it wants to go (p. 126). Certo made a strong point regarding the primacy of planning; it is illustrated in Figure 2:

Planning is the primary management function – the one that precedes and is the basis for the organizing, influencing, and controlling functions of management. Only after managers have developed their plans can they determine how they want to structure their organization, place their people, and establish organizational controls. Organizing, influencing, and controlling are all based on the results of planning. (p. 128)

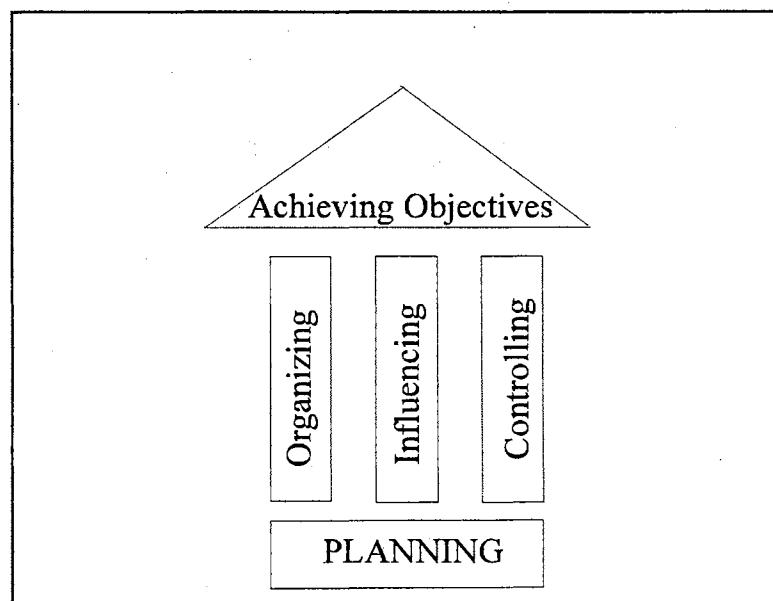


Figure 2. Flow of Management Function. From *Modern Management* (p. 128), Certo, (2000) Englewood Cliffs, NJ: Prentice-Hall.

However, Koontz and O'Donnell in *Management: A Systems and Contingency Analysis of Management Functions* (1976) offered that “the primary purpose of planning is to facilitate the accomplishment of enterprise and objectives” (p. 130). All other purposes are spin-offs of this fundamental purpose. Similarly, Glickman (1995) advised that “. . . a plan is intended to help you and your staff get where you want to go. It is a means, not an end in itself” (p. 233). Jaques (1980) defined plans as statements, at a given point in time, of aspirations or intentions about the future (p. 102). They must suffuse the entire organization or team in the present if it is to make progress towards the planned goals or objectives. Lundy (2000) advocated that everything an effective manager does is based on communication:

Effective managers listen to others' observations about the needs of the organization and its individuals. In discussing alternatives, they seek the insights of others. They evaluate strategies and make decisions based on the concerns of those involved. They delineate, clarify, and communicate goals to others. They discuss and agree on objectives, strategies, and budgets. (pp. 81-82)

Wartenberg (1996) added that management must continually provide the necessary leadership to improve the process by which they and their organizations do their jobs (p. 62). Erven in *The Five Functions of Management* (1990) concurred that the planning function is the fundamental function of management from which all others stem (p. 1). However, Erven added that planning moves from general to specific:

Vision: Nonspecific directional and motivational guidance for the entire organization. Top managers normally provide a vision for the business.

Mission: An organization's reason for being. It is concerned with the scope of business and what distinguishes the business from similar businesses.

Objectives: Objectives refine the mission and address key issues within the organization such as market standing, innovation, productivity, physical and financial resources, profitability, management and worker performance and efficiency.

Goals: Goals are specific statements of anticipated results that further define the organization's objectives (p. 1).

Stoner, et al., (1995) shared that planning implies that managers think through their goals and actions in advance and that their actions are based on some method, plan, or logic rather than on a hunch. In addition, plans yield organizational objectives and provide structure by which (1) the organization obtains and commits the resources required to accomplish objectives; (2) members of the organization complete activities consistent with the chosen objectives and procedures; and (3) progress toward completion of objectives is monitored and measured so that corrective action can be taken if necessary (p. 11).

Juran in *Managerial Breakthrough* (1995) admitted that there is an extensive body of literature regarding conventional management theory such as planning, organizing, directing, staffing, and controlling. However, Juran said with respect to conventional theory, planning fails to distinguish between planning objectives for breakthrough and planning objectives for control (p. 13). The issue is that most organizations put emphasis

on the calendar (short term vs. long term) rather than the purpose for planning (breakthrough vs. control). Juran's definition of breakthrough is change, a dynamic, decisive movement to new, higher levels of performance (p. 13). Juran's definition fits the mold for strategic planning described by Peters in *The Pursuit of WOW!* (1994). Peters cited Mintzberg's book, *The Rise and Fall of Strategic Planning* (1994) regarding the preferred mindset of planners. Mintzberg suggested that managers should not cling to preconceived strategies but to recognize their emergence and intervene when appropriate. According to Mintzberg then, the primary role for modern, artful planners is "to be finders rather than designers of strategies. They'll best serve their firms by discovering 'fledgling strategies in unexpected pockets of the organization so that consideration can be given to [expanding] them'" (p. 172). Peters in *The Tom Peters Seminar: Crazy Times Call for Crazy Organizations* (1994) said, "Only those who restlessly and boldly pursue risky projects and career moves, and who laugh off the pratfalls that attend such a strategy, stand much of a chance of making it to the winner's circle, let alone staying there" (p. 279). Peters remarked that the irony in most organizations today is that the concern over the next round of layoffs that haunts most professionals these days leads to conservatism at precisely the times that we need audacity; fear of failure is the principal cause of paralysis (pp. 278-279).

Organizing

Certo (2000) defined organizing as "the process of establishing orderly uses for all resources within the management system" (p. 212). The organizing function creates and

maintains relationships between all organizational resources by allocating them for specific activities. More specifically, Wells (1999) defined the organizing function as:

The process of logically grouping activities, delineating authority and responsibility, and establishing working relationships that enable the employees, and thus the entire unit, to work with maximum efficiency and effectiveness. (p. 234)

Organizational structures are most often represented with the development of organization charts. Stoner, et al., (1995) said that different goals require different structures and that managers must match an organization's structure to its goals and resources, a process called organizational design (p. 11). Structure referred to the relationships among the organization. Drucker in *Management Challenges for the 21st Century* (1999) said that increasingly "employees" have to be managed as "partners"- and in the definition of a partnership, all partners are equal. Partners cannot be ordered, they must be persuaded. Increasingly, therefore, the management of people is a marketing job (p. 21). Additionally, Drucker in *On the Profession of Management* (1998) summarized that:

Every enterprise is composed of people with different skills and knowledge doing many different kinds of work. Each member has to think through what he or she aims to accomplish – and make sure that associates know and understand that aim. (p. 175)

Champy in *Reengineering Management* (1995) emphasized that leadership must enable the workforce; that is, allowing people to exercise their skills and capabilities to the fullest extent possible – then stepping back and letting it happen (p. 115). Empowerment of the workforce was a strong motivator that tended to cause individuals to take ownership of their work and become more satisfied as a result. Unfortunately,

according to Weston and Harper (1998), there appears to be a significant difference between the perceptions of employers and employees on the subject of empowerment. The authors contended that “While employers feel that they have consistently delegated more responsibility to the employees, a significant number of employees continue to feel that they have no say in management decisions” (p. 2). Barrier wrote in *Nation’s Business* (December 1998) that employers should try to develop in their employees, “the ability to think and solve problems – a skill that can be cultivated like any other” (p. 25). Hellinghausen and Douglas (1999) revealed that cross-functional, empowered teams promote “out of the box” thinking which can lead to more effective solutions:

Fully implementing the team building process takes time and effort, but the benefits of an empowered workforce are immeasurable. Results from companies using the empowered team concept show that dramatic results occur with committed and creative teamwork; employees become more confident and motivated through the team process; a better and stronger company is the end result. (p. 32)

Erven (1990) said that organizing is establishing the internal organizational structure of the business (p. 1 of 2). The focus is on division, coordination, and control of tasks and the flow of information within the organization (p. 1 of 2). Lundy (1986) said “Effective managers discuss the scope of their authority and the extent of their responsibility with their supervisors” (p. 82). The team concept is important in today’s work environment for both private and public sectors. Team-based structures are not always appropriate and indeed have some disadvantages, but the public and private sectors today would likely agree that the advantages of teams clearly out-weigh the disadvantages. Whirter in *Managing People: Creating the Team-Based Organization* (1995) enumerated several advantages for a team approach:

- People, being the social creatures they are, tend to be happier working in a team environment as opposed to alone.
- Team participants can leverage the strengths and knowledge of fellow team members if given the proper incentives and training.
- Teams can set objective goals that are often not realistic for individuals.
- Teams can work toward major goals that relate to logical processes.
- Teams are able to react to changes quickly because the entire group can learn about and respond to change (p. 61).

Staffing

Wilkins (1999) stated in very succinct terms that “The structure of an organization is the formal means by which it coordinates the activities of its workforce to accomplish its goals and objectives” (p. 39). However, Wells (1999) added that staffing also includes “. . . defining work force requirements for the job to be done, as well as inventorying, appraising, and selecting candidates for positions; compensating employees; and training or otherwise developing both job candidates and current employees to accomplish their tasks effectively” (p. 234). Hill and Jones in *Strategic Management Theory* (1998) provided some interesting thoughts about the role of organizational structure. The building blocks, according to the authors, were differentiation and integration. Differentiation is the way in which a company allocates people and resources to organizational tasks in order to create value (p. 349). Generally speaking differentiation speaks to different types of tasks (functions or skills) within an

organization. Integration is the means by which a company seeks to coordinate people and functions to accomplish organizational tasks (p. 349). Communication and coordination are examples of organizational integration. Hill and Jones provided some good examples of various organizational structures and corresponding advantages and disadvantages of each. Galbraith in *Designing Organizations* (1995) noted that people who participate in groups are critical to efficient functioning. The author's comments were equally applicable to team structures. All individuals that make up a team should have a position on the team that gives them access to information relative to the issues being addressed and the authority to commit their unit or organization (p. 59).

Weston (1998) provided a word of caution regarding organizational structure: "Left alone, human nature creates even more tiers in an organization, with narrower spans of control. That way you can more easily get people promoted because there are more billets to fill"(p. 40). Weston asked FedEx CEO Fred Smith about his highest priority. Smith said, "We had an average span of control of one on eight and I'm aiming for one on thirteen in order to have less tiers and let the people who do the work feel more connected at the top"(p. 40). Weston (1998) said that organizations don't like to change; you have to force it (p. 40). Drucker (1998) agreed strongly with West's view regarding tiers:

It is a sound structural principle to have the fewest number of layers, that is, to have an organization that is as "flat" as possible – if only because the first law of information theory tells us that "every relay doubles the noise and cuts the message in half." (p. 10)

Keen (2000) provided insightful thinking related to future organizational structures. Organizational designs must shift from an institutional focus to a customer focus. Keen

reported that a review of books that have influenced business thought and practice over the last eighty years contained very few references to “customers” (p. 1). Some examples from an on-going study conducted by Keen Innovations are provided in Table I. Keen (1999) offered some logical views regarding the historical lack of customer focus:

The mainstream of business thought overlooks the customer so that the *fundamental* principles of organizational design start from the company’s own priorities, cost structures, processes, and staffing, and they work forward to the customer; they do not start with the customer and work back. (p. 2)

TABLE I
REFERENCES TO “CUSTOMER” IN LEADING BOOKS

Date, Author: <i>Book</i>	Text Pages	References in Index to:	
		“Customer”	“Consumer”
1938, Barnard: <i>The Functions of the Executive</i>	322	0	0
1950, Schumpeter: <i>The Economics and Sociology of Capitalism</i>	450	0	1
1960, McGregor: <i>The Human Side of Enterprise</i>	–	–	–
1963, Cyert & March: <i>A Behavioral Theory of the Firm</i>	–	–	–
1966, Drucker: <i>The Effective Executive</i>	176	2	0
1982, Peters & Waterman: <i>In Search of Excellence</i>	307	16	0
1985, Porter: <i>Competitive Advantage</i>	536	0	0
1990, Senge: <i>The Fifth Discipline</i>	390	5	0
1991, Davis & Davidson: <i>20/20 Vision</i>	205	3	0
1992, Davidow & Malone: <i>The Virtual Organization</i>	268	0	0
1993, Hammer & Champy: <i>Reengineering the Corporation</i>	216	32	0
1994, Collins & Porras: <i>Built to Last</i>	256	0	0

Note: From Designing New Organizational Structures, (pages 1-2), Keen, (2000).
Paper presented by the Filene Research Institute for discussion at the Colloquium.
[On-line], Available: <http://www.peterkeen.com/frich2.htm>.

⁰This is the date of Schumpeter’s last publication. The book referenced is a comprehensive anthology of his papers and books, published in 1991.

Directing

Directing (or influencing as described by Certo) is the process of guiding the activities of organization members in a direction that will lead to the attainment of management objectives. Deveson (1997) reviewed the major findings from an Australian report entitled "Enterprising Nation." Deveson called it the most important management report that has been published in Australia and one of the most important studies of its kind in the world (p. 4). The report presents a critical analysis of the key issues driving change for organizations in the 21st century. Deveson revealed that the Enterprising Nation report suggested a paradigm shift taking place in organizations that is impacting on managers and their needs (p. 4). In the future:

Senior management will move into the role of leader-coach, and the first line manager will become a facilitator. The key words being enabling, consulting and empowering. And successful ways of working together will require a much greater flexibility in structure and a great degree of autonomy and responsibility be given to those working on the front line. (p. 5)

Casby concluded in *A Comparison of Air Force Nurse Managers' Leadership*

Styles and Civilian Nurse Managers' Leadership Styles (1999):

Organizations must deal with change in their environments, achieving goals based on client demand; organizing the activities of individuals and teams, and supporting a system of shared values and beliefs. Effective leaders are able to have a positive impact on the organization and able to adapt more effectively within and between teams. (p. 41)

Directing involves focusing on organization members as people and dealing with such issues as morale, arbitration of conflicts, and the development of good working relationships (p. 304). Certo identified four functions of directing/influencing that are

primary management activities; leading, motivating, considering groups, and communicating (p. 305). Roden (1998) summarized that communication plays a vital role in the success of an organization and the satisfaction of employees. Furthermore, the style of leadership practiced by the supervisor could have an effect on the quality of communications (p. 25). Wells (1999) echoed Roden's view in advising that "Because the supervisor's job is to get things done through other people, effectiveness is closely tied to communicating directives clearly and in a way that will bring about the desired action" (p. 234). Lundy (1986) said communication is the logical foundation on which effective leadership is built and that effective managers participate in daily discussions about assignments, complications, failures, and successes (p. 83). Kutz in *Characteristics of Successful Aviation Leaders of Oklahoma* (1998) concluded from research regarding personal traits, skills, practices, backgrounds, academic and career success patterns that: "the most important skills identified were the interpersonal skills of communicating and listening" (p. 182). These skills are indeed critical to the successful application of all management principles.

Mariotti (1997) conceded that today's business environment is complex and filled with difficulty. However, highly motivated people working together with energy and enthusiasm can solve many complex and challenging problems. Praise for good work will reinforce that kind of contagious behavior (p. 15). Directing is influencing people's behavior through motivation, communication, group dynamics, leadership, and discipline (Erven, 1990). The purpose of directing is to channel the behavior of all personnel to accomplish the organization's mission and objectives while simultaneously helping

them accomplish their own career objectives (p. 1 of 8). In order to better channel behavior, an unnamed author in *Quality Progress* (2000) wrote that people at all levels are the essence of an organization and their full involvement maximizes their abilities to be used for achievement of organizational objectives (p. 113).

Controlling

Simply stated, control is making something happen the way it was planned to happen. Mockler in *Readings in Management Control* (1970) said that controlling is:

A systematic effort by business management to compare performance to predetermined standards, plans, or objectives to determine whether performance is in line with these standards and presumably to take any remedial action required to see that human or other corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives. (p. 14)

Certo (2000) listed three major functions of controlling: (1) measuring performance; (2) comparing measured performance to standard and; (3) taking corrective action (p. 423). Similarly, Wells (1999) listed three steps in the control function: (1) setting performance standards for the work; (2) comparing actual performance with the standard and, (3) taking corrective action to bring performance in line with the standard (p. 235). Bradford and Cohen in *Power Up: Transforming Organizations Through Shared Leadership* (1998) differentiated “the old and new worlds of leadership” (p. 16). Heroic leaders (old world) work hard to harness the work of team members to achieve common goals. They cajole, reason, bully, plot, and lobby to prevent border warfare, enforce cooperation, and stimulate laggards. Post-heroic leaders share responsibility for coordination and control. When goals are jointly determined and

mutual expectations clear and public, team members hold each other accountable.

Instead of one trying to control all, all control all (pp. 55-56). Delavigne and Robertson in *Deming's Profound Changes* (1994) cited Deming's philosophy regarding cooperation that is very instructional with respect to the controlling function of management. Deming said:

Cooperation is the natural and inevitable result in the company when management removes the necessity for people to compete with one another for artificially scarce rewards, favors, and positions. (p. 158)

Controlling (Erven, 2000) is the process of establishing performance standards based on the firm's objectives, measuring and reporting actual performance, comparing the two, and taking corrective or preventive action as necessary (p. 1). Feedback is a critical function of the controlling process. Rohlander (1999) advised that communications must be honest and open to ensure a free-flow of information in the organization (p. 22). More specifically, Rohlander (1999) recommended giving honest feedback promptly and in a positive way to ideas, attitudes, activities, and results (p. 22). Hoerr (1999) intimated that all we do in business is through, with and for people. High-performing companies really value their people. Hoerr also summarized "Company leaders serve their people by developing, empowering, and challenging them"(p. 27). Lundy (1986) stressed the importance of effective communication to the controlling function of management:

When it comes time to check progress against previously agreed to objectives, effective managers find out what data to gather. They then share information on what was planned, what was actually achieved, what may have caused any deviation, and what they think should be done about it. They cooperate in taking effective corrective action. They delineate

and discuss reporting procedures with both supervisors and subordinates.
(p. 82)

Control is a critical function of management in terms of ensuring that the organization executes in a way that will achieve corporate objectives. A manager must be very effective with respect to knowing the course that the organization is taking in order to make adjustments when needed. Juran in *Juran on Leadership for Quality* (1989) linked the planning and control functions. Juran said that upper management's assurance of the adequacy of control systems (for products, processes and individual or organizational performance) is accomplished mainly through the auditing process (p. 150). He continued that the feedback loop is fundamental to all control and "it takes a great deal of planning to provide the operating forces with the means of applying the feedback loop to specific control situations" (p. 151).

Drucker in *The Executive in Action* (1996) related that he studied executives for many years, looking for traits or characteristics that were attributable to certain individuals. Drucker eventually learned that there is no "effective personality" (p. 545):

Among the effective executives I have known and worked with, there are extroverts and aloof, retiring men, some even morbidly shy. Some are eccentrics, others painfully correct conformists. Some are fat and some are lean. Some are worriers, some are relaxed. Some drink quite heavily, others are total abstainers. Some are men of great charm and warmth, some have no more personality than a frozen mackerel. (p. 546)

Drucker continued on and on with the diversity among executives and finally made the point that effective executives differ as widely as any other profession. But he offered that effectiveness is a habit; that is, a complex of practices that can be learned (p. 547).

Teams and Group Behavior

Nelson and Quick (2000) defined a group as two or more people having common interests or objectives. Characteristics of a well functioning, effective group are:

- The atmosphere tends to be relaxed, comfortable, and informal.
- The group's task is well understood and accepted by the members.
- The members listen well to one another; most members participate in a good deal of task-relevant discussion.
- People express both their feelings and their ideas.
- Conflict and disagreement are present and centered around ideas or methods, not personalities or people.
- The group is aware and conscious of its own operation and function.
- Decisions are usually based on consensus, not majority vote.
- When actions are decided, clear assignments are made and accepted by members of the group (p. 282).

Nelson and Quick described four distinguishing characteristics of a well-functioning effective group:

- Clear purpose and mission (group may reexamine, modify, revise or question).
- Behavioral norms are well-understood standards of behavior within the group.
- Highly cohesive groups with high production standards are very productive.

- Flexible status structure meaning shared leadership (pp. 288-290).

Katzenbach and Smith (1993) defined a team as “a small number of people with complementary skills who are committed to a common mission, performance goals, and approach for which they hold themselves mutually accountable” (pp. 111-120). Teams are very common throughout the world in today’s competitive work environment.

Nelson and Quick made clear distinction between groups and teams: “Groups emphasize individual leadership, individual accountability, and individual work products. Teams emphasize shared leadership, mutual accountability, and collective work products” (p. 282). Teams are excellent in performing work that is complicated, complex, interrelated, and/or simply too large for an individual to manage; they excel where knowledge, talent, skills, and abilities are dispersed across organizational members and require integrated effort for task accomplishment (p. 292). Hirschhorn (1991) believed that the recent emphasis on team-oriented work environments is based on empowerment with collaboration, not on power and competition (p. 292). Hirschhorn compared the new team environment (empowered) with the old work environment as shown in Table II.

Self-managed teams are ones that make decisions that were previously reserved for managers. Nelson and Quick also identified them as self-directed teams or autonomous work groups. Empowerment, as reviewed earlier, can be a powerful if not essential ingredient for teamwork but requires the development of certain skills in order to be effective. They include competence skills, process skills, cooperative and helping behaviors, and communication skills (p. 298). Rhona Flin in *Sitting in the Hot Seat* (1996) cited the research conducted by psychologists Dr Eduardo Salas and Dr Jan

TABLE II
COMPARISON OF NEW TEAM AND OLD
WORK ENVIRONMENT

New Team Environment	Old Work Environment
Person comes up with initiatives	Person follows orders
Team has considerable authority to chart its own steps	Team depends on the manager to chart its course
Members form a team because people learn to collaborate in the face of their emerging right to think for themselves. People both rock the boat and work together.	Members were a team because people conform to direction set by the manager. No one rocked the boat.
People cooperate by using their thoughts and feelings. They link up through direct talk.	People cooperated by suppressing their thoughts and feelings. They wanted to get along.

Note: From Managing in the New Team Environment, (pp. 13-14). Hirschhorn, (1991) New York, NY: Addison-Wesley Publishing.

Cannon-Bowers. These psychologists, who are part of a research group at the Training Systems Division of the US Naval Air Warfare Center in Orlando, Florida, have conducted investigations with more than 300 Navy teams (p. 192). The researchers concluded that basic and advanced teams have distinctive characteristics:

In order to have a team of basic effectiveness, team members must be individually competent not only at their own tasks but must also have the necessary team-working skills, such as being able to communicate clearly. The group needs to feel like a team, to be motivated to perform well and to have a clear idea of the team's objective. These are the minimum requirements for an effective team, but for enhanced performance, the following are also required:

- Shared understanding of the task
- Shared understanding of the other team member's responsibilities

- Team leadership
- Collective efficacy (sense of “teamness”)
- Anticipation: “getting ahead of the power curve”
- Flexibility: (i) adjust allocation of resources to fit task; (ii) alter strategies to suit task (recognize cues)
- Efficient implicit communication (aware of each other’s needs)
- Monitor own performance (self-correcting) (pp. 192-193)

The analysis of team dynamics by Salas and Cannon-Bowers indicated that to achieve superior performance, leadership is also important, and the leader must enable the team to think ahead (p. 193).

Decision-making is a critical activity in any organization. Nelson and Quick identified a series of eight steps in the decision making process as shown in Figure 3. An effective decision was defined by Nelson and Quick as “A timely decision that meets a desired objective and is acceptable to those individuals affected by it” (p. 313). Clearly the success of an organization is a function of a managers ability to make effective decisions. Many decision-making models were available; Nelson and Quick listed three:

- Rational Model – a logical, step-by-step approach to decision making, with a thorough analysis of alternatives and consequences. This decision making model comes from classic economic theory and contends that the decision-maker is completely rational in his or her approach. The decision-maker tries to optimize; to select the best solution.

- Bounded Rationality Model – Herbert Simon recognized limits on how rational a decision-maker can actually be (Simon won a Nobel Prize in 1978 for his decision theory; there are constraints that force a decision-maker to be less than completely rational).
- Garbage Can Model – a theory that contends that decisions in an organization are random and unsystematic. Decisions are a matter of timing or appear to happen out of sheer luck (pp. 313-314).

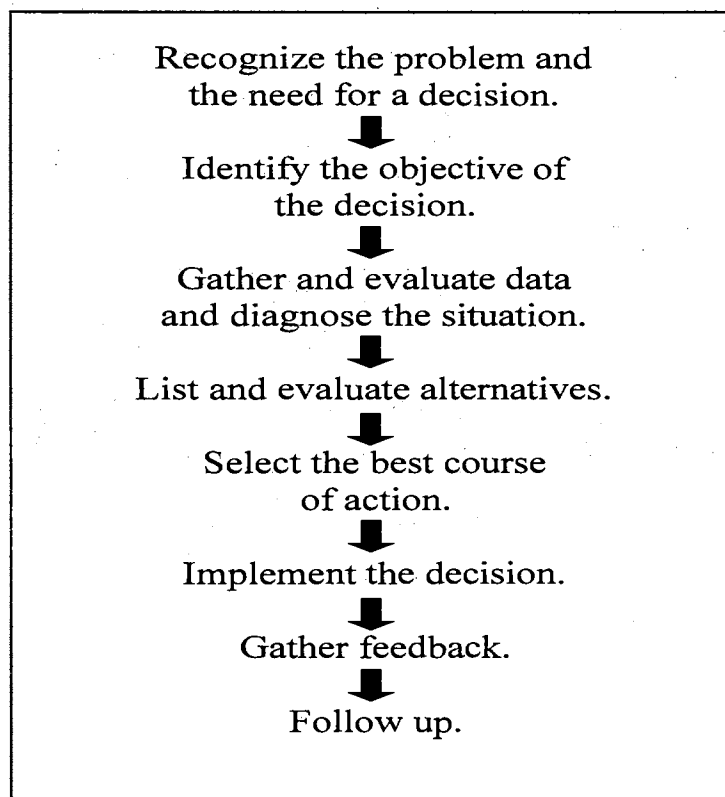


Figure 3. The Decision Making Process. From Organizational Behavior: Foundations, Realities, & Challenges, (p. 313). Nelson, & Quick, (2000). Cincinnati, OH: South-Western College Publishing.

Group decision making offers a number of advantages. The one most frequently mentioned is synergy. Nelson and Quick defined synergy as “ A positive force in groups that occurs when group members stimulate new solutions” (p. 329). Other advantages include gaining commitment to a decision and bringing more knowledge and experience to a problem-solving situation. Nelson and Quick also defined four stages of development that all groups, formal and informal go through:

- Mutual acceptance – In this stage, the focus is on the interpersonal relations among the members. Members assess one another with regard to trustworthiness, emotional comfort, and evaluative acceptance.
- Decision-making – Planning and decision-making occur during the second stage of a group's development. The focus turns from interpersonal relations to decision-making activities related to the group's task accomplishment. Specifically, the group must make decisions about what its task is and how to accomplish that task.
- Motivation and commitment – In the third stage of development, the group has largely the interpersonal and task issues. Member attention is directed to self-motivation and the motivation of other group members for task accomplishment. Some members focus on the task function of initiating activity and ensure that the work of the group really gets moving.
- Control and sanctions – In its final stage of development, a group has become a mature, effective, efficient, and productive unit. The group has successfully worked through necessary interpersonal, task, and authority

issues. A mature group is characterized by a clear purpose or mission; a well-understood set of norms of behavior; a high level of cohesion; and a clear, but flexible, status structure of leader – follower relationships (pp. 286-287).

Hersey, Blanchard, and Johnson *in Management of Organizational Behavior* (1996) described the Situational Leadership Model; a tool that can be used by managers, salespeople, teachers and others to make the moment-by-moment decisions necessary to effectively influence other people (p. 189). The model, developed by Hersey and Blanchard at the Center for Leadership Studies, used as its basic data the perceptions and observations made by managers. Situational Leadership is based on the interplay among (1) the amount of guidance and direction (task behavior) a leader gives; (2) the amount of socioemotional support (relationship behavior) a leader provides and; (3) the readiness level that followers exhibit in performing a specific task, function, or objective (p. 189). Hersey, et al., (1996) described the role of leadership in a team environment by applying the Situational Leadership Model. The model centers around five interrelated questions:

- What objectives do we want to accomplish? The manager must first determine the task-specific outcome the team is required to accomplish.
- What is the team's readiness in the situation? Once an objective has been stated, the manager must then diagnose the team's readiness to accomplish the objective.
- What intervention should the leader make? After the team's readiness has been diagnosed, the leader is now prepared to use the appropriate style:

1. *Empowering* – team leader empowers the team to be self-managing.
 2. *Involving* – the team leader involves the team in setting it's own goals and direction.
 3. *Clarifying* – The leader clarifies team activities, fine-tuning roles and responsibilities.
 4. *Defining* – The team leader concentrates on focusing the team: defining goals, roles, and responsibilities.
- What was the result of this leadership intervention? This step requires assessment to determine if results match expectations.
 - What follow-up, if any, is required? If there is a gap between present performance and desired performance, then additional leadership interventions are required; and the cycle begins again (p. 365).

Cruise Missile Team: Leadership and Management

The last two military conflicts that involved United States military forces underscored the future role of aerospace power in achievement of objectives with less risk to United States military personnel. Lieutenant General Norton Schwartz and Colonel Robert Stephan wrote in “Don’t go downtown without us” (*Aerospace Power*, Spring 2000):

Aerospace forces can bring overwhelming precision firepower to bear, achieving devastating operational and tactical-level effects against key enemy targets. Military technology is making great strides in the ability of

stand-off weapons to achieve very precise effects even in the urban environment (p. 8).

The precision capability that the U.S. Air Force authors described was provided in part by the Air Force Conventional Air Launched Cruise Missiles that were managed at Tinker Air Force Base in Oklahoma City, Oklahoma. The Conventional Air Launched Cruise Missile Team managed all aspects of the weapon system including modifications and day-to-day missile support activities. The team, lead by a program manager, was self-managed but reported to the Cruise Missile Product Group Manager (PGM); see Figure 4. Stoner, et al., (1995) defined a self-managed team or self-managed work group to be a team that manages themselves without any formal supervision (p. 502). The authority and responsibilities of the missile team were consistent with the characteristics of a self-managed team as described by Stoner, et al., (1995):

- The missile team had responsibility for a “relatively whole task.”
- Team members individually possessed a variety of task-related skills.
- The team had the authority to determine such things as work methods, scheduling, and assignment of members to different tasks.
- The performance of the team was the basis for compensation and feedback (performance as a team was partial basis for compensation for the missile team) (p. 502).

The PGM was responsible for four weapon systems within the Cruise Missile Product Group and reported directly to the Designated Acquisition Commander (DAC) whose office was located at Wright Patterson Air Force Base in Dayton, Ohio. A deputy PGM shared leadership and management responsibility with the PGM and acted on his

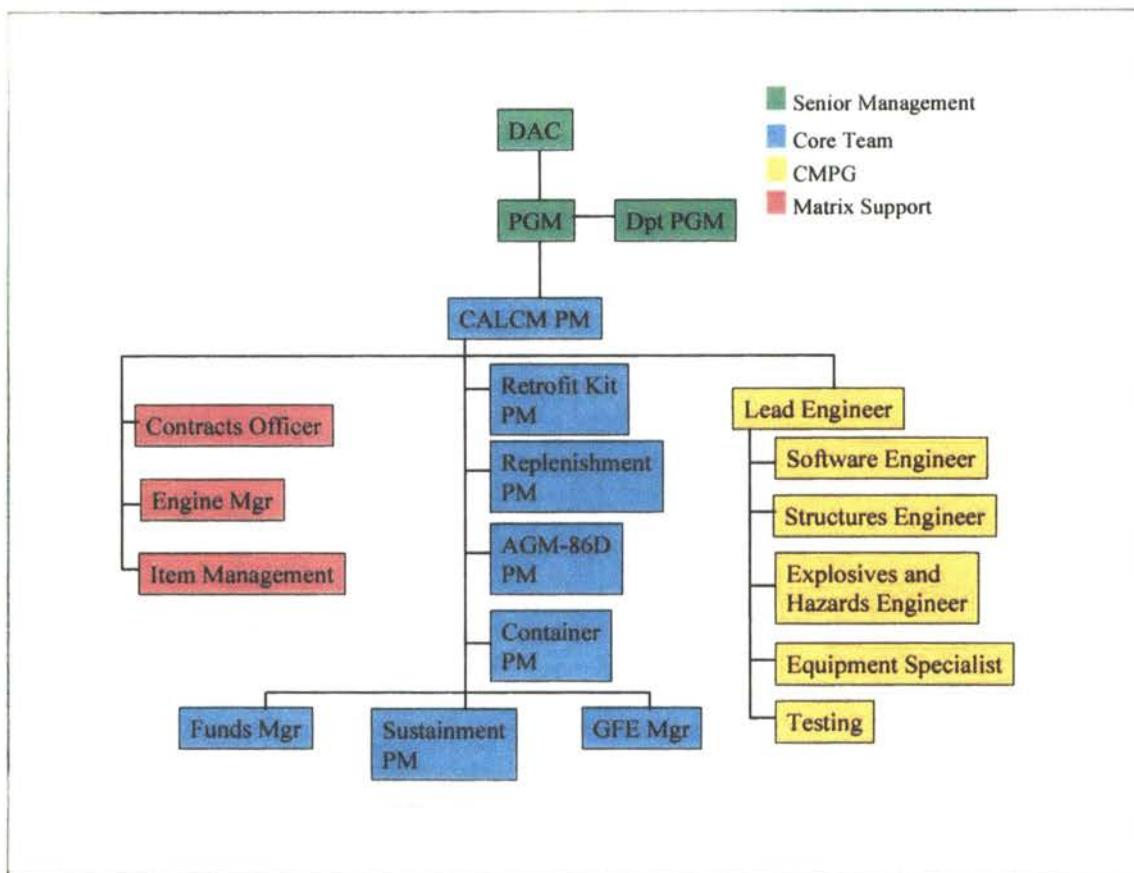


Figure 4. Conventional Air Launched Cruise Missile Team

behalf as needed. The Conventional Air Launched Cruise Missile *core* team was responsible for major missile subsystems and reported directly to the program manager; they were co-located in the same geographical work area. Functional missile expertise was provided from within the CMPG organization (such as engineering) and from various organizations within the Tinker Air Force Base Air Logistics Center (such as contracting). The Conventional Air Launched Cruise Missile Team was a cross-functional project team. Bishop (1999) said that cross-functional teams bring together an array of specialists that jointly and simultaneously manage projects (p. 6). The Conventional Air

Launched Cruise Missile Team consisted of a core team (full time) and additional functional experts participated on an as needed basis. The team membership expanded and contracted as a function of the workload. Bishop (1999) wrote about some key advantages of using cross-functional teams:

By using cross-functional teams, decision-making is decentralized through the use of lateral decision processes, which can cut across the traditional vertical lines of functional authority, speeding the decision making process and increasing the chance of “buy-in” and cooperation from all affected departments. Presuming that clear corporate objectives are consistently understood within the team, there is a significantly greater potential of high quality decisions occurring through this joint decision making process. (p. 7)

CHAPTER III

METHODOLOGY

Introduction

Statement of the Problem

The successful execution of the Conventional Air Launched Cruise Missile Replenishment Program during 1999 was a noteworthy accomplishment in Air Force program management. Leadership, management and other factors may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Therefore, what leadership, management, and other factors contributed to the rapid execution of the Conventional Air Launched Cruise Missile Replenishment Program?

Purpose of the Study

The purpose of the study was to examine leadership, management and other factors during calendar year 1999 that contributed to the rapid accomplishment of program objectives and success of the Conventional Air Launched Cruise Missile Replenishment Program in only seven months.

Methodology

A case study using qualitative methods was selected because the 1999 Missile Replenishment Program represented a “case history” of particular interest. The study was designed to collect qualitative data from a purposive sample of the population (13 participants) regarding the impact of leadership, management principles, and other factors on the accelerated Conventional Air Launched Cruise Missile Replenishment Program. The total population consisted of 40 individuals. Specific interview questions were structured to collect data that would support the five broad research questions listed below (Appendix A). The questions focused on leadership, management principles (planning, organizing, staffing, directing, and controlling), urgent need and other factors. The questions were designed to collect qualitative data about the significance and the effects of leadership, management principles, urgent need and other factors on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The research data was compared to the literature with the objective of gaining insights and assessing the influence of leadership, management and other factors on the rapid completion of program objectives. Other topics related to the research problem that surfaced during the interview process were also included in the study.

Research Questions

Specific interview questions were structured to collect data that would support the five broad research questions that were listed in Chapter I:

1. What were the leadership characteristics of the Cruise Missile Product Group?
2. How did the Cruise Missile Product Group leadership influence execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program?
3. How effectively were management principles, including planning, organizing, staffing, directing and controlling employed by the Cruise Missile Product Group?
4. How did management principles influence execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. What urgent need or other factors could have contributed to the rapid completion of program objectives?

Qualitative Study Rationale

Yukl (1998) articulated the controversy about the direction of future leadership research; quantitative versus qualitative. Research methods appropriate for studying leadership and the type of empirical data needed to advance the understanding of leadership processes are also controversial (p. 505). However, Yukl revealed that some of the critics of survey research advocate greater use of descriptive methods such as observation, interviews, and intensive case studies (e.g., Bryman, et al., 1988; Luthans, Rosenkrantz, & Hennessey, 1985; Morgan & Smircich, 1980; Strong, 1984). Yukl said, "These methods appear better suited for studying leadership from a systems perspective"

(p. 505). He also said, however, that descriptive research methods also have limitations, regardless of the method chosen (quantitative versus qualitative). Yukl summarized, “It is important to select methods that are appropriate for the type of knowledge sought rather than merely using whatever methods seem most convenient” (p. 505).

A case study using qualitative methods was selected because the 1999 Missile Replenishment Program represented a “case history” of particular interest. Gummesson (1991) said that this type of research “seeks to arrive at specific conclusions regarding a single case” (p. 74). The study was designed to collect qualitative data from a purposive sample of the population regarding the impact of leadership and management principles on the accelerated Conventional Air Launched Cruise Missile Replenishment Program.

Wiersma (2000) summarized extensive descriptions about the underlying epistemology of qualitative research. One of Wiersma’s five major points lent support to the interview process in capturing accurate qualitative research data:

It is the perceptions of those being studied that are important, and, to the extent possible, these perceptions are to be captured in order to obtain an accurate “measure” of reality. “Meaning” is as perceived or experienced by those being studied, it is not imposed by the researcher. (p. 198)

The research data was compared to the literature with the objective of gaining insights and assessing the influence of leadership, management and other factors on the rapid completion of program objectives. Other topics related to the research problem that surfaced during the interview process were included in the study. An independent party was employed to conduct the interviews because a supervisory relationship existed between the researcher and the subjects (Appendix B). It was critical to the reliability

and validity of the study to collect data without revealing the identity of the participants.

Rubin and Rubin (1995) added:

People who are in position to have the knowledge you want may not always want to share that information openly. They may feel that it is their responsibility to give “the company line” or tell you how people are supposed to act rather than how they really act. (p. 67)

Population

The population of all individuals directly involved in the Conventional Air Launched Cruise Missile was 40. It included the core team that consisted of eight individuals who supported the program on a full-time basis. The population also included those individuals outside the Cruise Missile Product Group at Tinker Air Force Base that were in a supporting role for the accelerated missile project. Personnel from other organizations that were “matrixed” to the Cruise Missile Product Group were included in the population. The Designation Acquisition Commander, Cruise Missile Product Group senior leaders, middle managers, part-time functional team members, and secretarial support personnel were also part of the population.

Sample

A purposive sample was taken from the total population (all Conventional Air Launched Cruise Missile team members at Tinker Air Force Base that were involved in management and execution of the missile project). In addition, the senior Air Force Officer responsible for management of the Conventional Air Launched Cruise Missile was included. The purposive sample included the Designated Acquisition Commander,

and program office management and staff personnel to enhance triangulation of the data. Miles and Huberman in *Qualitative Data Analysis* (1994) highlighted some key features of qualitative sampling; “Qualitative researchers usually work with small samples of people, nested in their context and studied in-depth –unlike quantitative researchers, who aim for larger numbers of context-stripped cases and seek statistical significance” (p. 27). Miles and Huberman added that qualitative samples also tend to be purposive rather than random. The sample for the study consisted of thirteen subjects that were interviewed and included core team members and some individuals that were not designated as core. The purposive sample was selected based on the following criteria:

1. Would the individual have the expertise and depth of experience in support of the missile program in 1999 that would enable them to respond in-depth to the interview questions?
2. Would the individual's participation contribute to ensuring that all functional disciplines were adequately represented in the study?
3. Would the individual's participation contribute to ensuring senior and middle management representation in the study?

Instrument

An interview guide containing open-ended questions was used to collect data that would answer the research questions. *Research Methods in Education* (Wiersma 2000) and the Oklahoma State University course entitled Research Design were used to develop the research questions. The questions were also compared to a similar qualitative

leadership study (Kutz, 1998). A research committee reviewed the questions contained in the interview guide and the methodology for selection of research participants. An academic committee advisor recommended modifications that were incorporated. The data collected from the initial three interviews was reviewed to ensure that the instrument provided the desired data. The interview questions along with a glossary of terms were provided in advance to those individuals who were chosen to participate in the study. The research procedures were reviewed and approved by the Oklahoma State University Institutional Review Board (Appendix C).

Data Analysis

The research data was collected during face-to-face interviews using broad open-ended questions. Gay in *Educational Research* (1996) described a typical qualitative interview as a one-on-one meeting in which a researcher asks a series of open-ended, probing questions. Gay also remarked that the interview data collection method, in addition to serving triangulation objectives, facilitates the collection of data not obtainable in any other way. Some past events or phenomena simply cannot be observed. Any data deemed relevant to the research problem was also used in the study. Hand-written notes and digital recordings were used to document the research data. The digital voice recordings were downloaded to a personal computer, which further ensured the confidentiality of the respondents' identity (Appendix D). The responses provided from the interviews were tabulated and categorized by research objective to aid the research analysis to include comparison with the literature. The research data was used to

examine leadership, management and other factors that may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Leadership and management principle trends that supported successful execution of the program were key to achieving the objectives of the study.

CHAPTER IV

FINDINGS

Introduction

Statement of the Problem

The successful execution of the Conventional Air Launched Cruise Missile Replenishment Program during 1999 was a noteworthy accomplishment in Air Force program management. Leadership, management and other factors may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Therefore what leadership, management, and other factors contributed to the rapid execution of the Conventional Air Launched Cruise Missile Replenishment Program?

Purpose of the Study

The purpose of the study was to examine leadership, management and other factors during calendar year 1999 that contributed to the rapid accomplishment of program objectives and success of the Conventional Air Launched Cruise Missile Replenishment Program in only seven months. Insights gained from the study could provide a useful leadership and management resource for others in government and

industry and serve as a basis for further research in the field of leadership and management.

Methodology

A case study using qualitative methods was selected because the 1999 Missile Replenishment Program represented a “case history” of particular interest. The study was designed to collect qualitative data from a purposive sample of the population (13 participants) regarding the impact of leadership, management principles and other factors on the accelerated Conventional Air Launched Cruise Missile Replenishment Program. The total population consisted of 40 individuals. Specific interview questions were structured to collect data that would support the five broad research questions listed below. The questions focused on leadership, management principles (planning, organizing, staffing, directing, and controlling), urgent need and other factors. The questions were designed to collect qualitative data about the significance and the effects of leadership, management principles, urgent need and other factors on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The research data was compared to the literature with the objective of gaining insights and assessing the influence of leadership, management and other factors on the rapid completion of program objectives. Other topics related to the research problem that surfaced during the interview process were also included in the study.

Research Questions

The following research questions were answered by the study:

1. What were the leadership characteristics of the Cruise Missile Product Group?
2. How did the Cruise Missile Product Group leadership influence execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program?
3. How effectively were management principles, including planning, organizing, staffing, directing and controlling employed by the Cruise Missile Product Group?
4. How did management principles influence execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. What urgent need or other factors could have contributed to program success?

Demographics

Demographic information regarding the sample population was limited due to the requirement to protect the identity of the participants. However, the thirteen participants included military, civilian contractor, and government civilian personnel with a broad range of Conventional Air Launched Cruise Missile expertise. The population included the following management/functional area disciplines (number of participants):

- Designated Acquisition Commander (one)
- Program managers (five)
- Engineers (three)
- Contracting officers (one)
- Financial manager (one)
- Logistician (one)
- Contractor support (one)

Research Question One: Leadership Characteristics of the
Cruise Missile Product Group (CMPG)

For purposes of this study, “leadership” was defined as members of the senior management team that included the Designated Acquisition Commander, the Product Group Manager, and the Deputy Product Group Manager.

CMPG Leadership Role

Participant 1. The CMPG leadership played a significant role and was a large contributor to the success of the Cruise Missile Replenishment Program. Specifically, the Product Group Manager (PGM) did not exert a lot of unnecessary pressures and guidance upon the program manager and the team members. Briefing skills (verbal communication) on the part of the senior leader also played a significant role in the success of the program. The successful progression of the replenishment program briefing at various levels within the Air Force and the Office of the Secretary of Defense

paved the way for approval of the missile replenishment program. Official direction and funding to proceed with the accelerated missile replenishment program quickly followed the aforementioned series of briefings.

Participant 2. Leadership played a significant role in the execution of the program mainly because the leaders frequently took very quick action to execute the program. A number of rapid accomplishments were attributable to the significant role that leadership played in the missile replenishment program:

- The program was “put together from scratch in a matter of less than about a week and a half . . . the program briefing was accepted by the Chief of Staff of the Air Force at that point.” Leadership was a valuable asset during that period of time. The delivery of missiles would never have occurred that quickly nor have been that well accepted in the absence of strong leadership.
- The work was put on contract in less than a month following the briefing to the Chief of Staff of the Air Force; the events that lead to just the contract award nominally took at least nine months.
- Seven months after the contract was signed, the first missiles were rolling out of the contractor’s production plant.

Participant 3. Leadership played a significant role in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program because the leader of the program set the tone for the missile program. Any leader can greatly

influence the success or failure of a project because of the individual's unique position of authority and influence upon others. Therefore the leader historically plays an integral role based on how he/she sets the tone for the program.

Participant 4. The CMPG leadership did not play a significant role in the *execution* of the program but the leadership did play a significant role in the *success* of the program.

Participant 5. The CMPG leadership played a significant role because they provided goals and allowed team members the freedom to meet objectives and accomplish the mission.

Participant 6. The CMPG leadership played a significant role in the success of the program. The CMPG leadership was able to motivate the team and keep it motivated, striving toward awarding the contract as quickly as possible and the ultimate program goal - delivery of missiles. In a sense the leadership "carried the flag" and encouraged the team to get the job done.

Participant 7. The CMPG leadership played a big role. The country had been at war and the Air Force's Conventional Air Launched Cruise Missile inventory had been seriously depleted. To quickly begin the process of replenishment, the senior leaders had to step up and go before the Chief of Staff of the Air Force with a solid plan. The CMPG leaders did a good job of responding to that need.

Participant 8. The CMPG leadership played a big part in what was required from a management perspective and the staff had the experience and organizational structure to plan and execute the replenishment program. In addition, the contractor played a significant role; it was a combined (government/contractor) effort that yielded the remarkable results.

Participant 9. In the beginning, the CMPG senior leader (the PGM) appeared to be unsure of his role because he had not been in the organization very long and did not know that much about the Conventional Air Launched Cruise Missile Program. Later when he became familiar with the program, he “jumped right in with both feet.” The bottom line was that his contributions were significant in getting everything off the ground.

Participant 10. The CMPG leaders played a significant role in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. The program organizational structure was key. The most senior official in the management hierarchy was the Designated Acquisition Commander (DAC); an Air Force Major General. The General was the final decision authority on acquisition issues affecting the replenishment program. However, the majority of the authority and responsibility for executing the program was delegated to the PGM within the CMPG (Air Force Colonel position). The DAC and the PGM worked well as a team completing the groundwork before turning to the integrated product team for specific planning, organizing, and other key team responsibilities. The missile integrated product team

established aggressive program milestones and managed the replenishment program to a successful conclusion.

Participant 11. The CMPG leaders played a significant role in the successful execution of the 1999 missile replenishment program. The senior leaders played a major role in directing the program and executing other leadership responsibilities. Some of their key functions were briefing various aspects of the program to Air Force decision-makers, program issue resolution (impediments to progress), and conflict resolution. Effective program staffing by the senior leaders enabled the team to resolve many issues at the integrated product team level.

Participant 12. The senior leadership on the Conventional Air Launched Cruise Missile Replenishment Program was comprised of three individuals; the CMPG Manager, his deputy and the missile program manager. The accelerated pace of the replenishment program that included no new component development was key to success; the challenge was to deliver additional missiles as rapidly as possible. The three senior leaders were “enablers”; their roles were significant in the success of the program.

Participant 13. It is difficult to separate what the government does from what a company does in systems acquisition. The relationship has to be a joint and almost a symphonic leadership relationship between the CMPG Product Group Manager and the industry counter-part within the Company, the Boeing Program Manager. The same parallel relationship occurs at the senior executive level. The role of the Designated Acquisition Commander and the senior vice president within the Boeing Company are

very similar and both executives are mutually responsible and accountable for the success or failure of the program. Moreover, the government acquisition business is a partnership between the Company that we choose to do the work and the Government which has the oversight responsibility to see that the work is done successfully and to ensure the taxpayer's money is wisely invested. Trace any or all success or failure on an acquisition program to leadership; that is, the entire chain of leadership, from the CEO on down and from the Secretary of the Air Force, on down on the Government side. Did the CPMG leadership play a significant role in the successful execution of the program? The answer is "absolutely." Without that leadership, without that commitment from the top on down it wouldn't have happened.

Senior Leadership Style and Characteristics

Participant 1. The CPMG senior leader's style allowed the program office team who were experts in planning and the Boeing team who were experts in building the missiles to do their respective jobs. The senior leader did not try to exert a lot of unnecessary pressure and guidance upon the team.

Participant 2. Empowerment of the people doing the work was a significant leadership characteristic. The PGM was confident that the trained and experienced workforce could fully execute their individual and team responsibilities. The PGM aided the team only when he deemed it necessary or requested by the team as they worked through issues.

Participant 3. The CMPG leadership style was to lead by example; not micro manage team members but rather, allow the workforce to carry out daily responsibilities in accomplishing assignments. In addition, the CMPG leadership was readily available to accommodate the decision-making needs of the team.

Participant 4. The senior leadership in the CMPG can be summarized as very hands-on and very success oriented. The senior leaders, for the most part, empowered the workforce to execute their responsibilities.

Participant 5. The leadership within the CMPG was very good. The leadership style could be described as non-intrusive. In essence, the senior leaders set goals for the team and ensured that the necessary resources to execute the program were available to the replenishment team. The team, in-turn, ensured that the senior leaders were routinely informed with respect to program status.

Participant 6. The leaders in the organization were not too “hands-on” with respect to their involvement. They were involved in execution, but essentially gave the team the freedom to get the job done without much interference.

Participant 7. The senior leaders pulled together as a team and worked together like a team. They worked closely together during the holiday period between Christmas (1998) and New Year’s Day to initiate the early planning for the Conventional Air Launched Cruise Missile Replenishment Program. During the first week of 1999, the CMPG senior leaders briefed numerous military and civilian leaders in Washington D. C.

in order to gain approval for funding and to begin the program. The senior leadership did quite well in that regard.

Participant 8. The leadership style in the CMPG could be described as “laid-back.” The senior leaders empowered the team to develop ideas and plans and present them for review and approval/disapproval. Another discriminating characteristic of their leadership style could be described as partnering. Much of the replenishment program planning was accomplished with the participation of CMPG personnel at all levels within the organization; a collective program planning and execution effort with maximum participation. The senior leaders avoided a directive approach, i.e., “you will do this,” or “you will do that.”

Participant 9. The commander (PGM) of the CMPG must be a calm but forceful personality. The Deputy PGM was a strong and forceful leader and had been in place for some time. However, the PGM, the most senior leader in the missile organization, had recently arrived; at the time when the accelerated missile replenishment program was in the very early planning stages. It took the PGM a little time to get established in the missile organization and he likely felt overwhelmed at times. However, after a period of acclimation to the organization and the programs, he took charge and ensured that the accelerated program was executed in accordance with established goals and objectives.

Participant 10. The CMPG leadership was very versatile and very much “on target.” The CMPG leaders maintained continuous awareness of the replenishment program. The PGM and the deputy PGM were very supportive of the integrated product

team. They gave the team the responsibility to execute the program; their leadership style was very effective.

Participant 11. The senior leaders employed a predominantly directive leadership style.

Participant 12. Many in the government were accustomed to what some called the “old style military management – hierarchical directive control.” However, the PGM’s leadership style could be described as laissez faire. The PGM and other senior leaders created a cordial, informal work environment. That leadership style was very effective because the team consisted of a very experienced and somewhat independent group of individuals. Whether the team’s composition and characteristics influenced the style of leadership employed by the senior leadership was not known.

Participant 13. The leadership style of a program manager has to be directive in nature but a leader must convince people in the organization and also the people in the Company that an objective is worthy to pursue. There is a dual leadership role - a direct leadership, traditional leadership role, and also a role of the consensus of thought because you’re dealing with very intelligent people in the running of programs, both on the Company and Government side. Most of the time in an organization with a high level of intelligence, the leadership style has to be one of explaining the rationale for why the leadership chose a certain direction rather than just expecting blind acceptance.

Research Question Two: Leadership Influence on the
Conventional Air Launched Cruise Missile
Replenishment Program

Leadership Effect on Assignments

Participant 1. The CMPG leadership empowered the team to accomplish the work. The senior leaders trusted the missile team in that personnel knew what had to be done. The senior leaders within the CMPG simply directed and empowered the program manager and the functional team members to produce the desired results.

Participant 2. The CMPG leadership style was to empower the replenishment team personnel that were responsible for executing the program plan to simply take responsibility for doing the work.

Participant 3. The CMPG leadership laid-out the requirement and then empowered the work force to accomplish the objectives of the missile program. In addition, an open door policy was in effect whereby individuals or groups could go to the senior leaders, explain the dilemma or problem and receive additional guidance.

Participant 4. The CMPG leaders were certainly quick to offer support of any kind that the team required in order to continue to make progress. The leadership avoided stalling or interfering with day-to-day progress or otherwise impeding progress on the accelerated missile program.

Participant 5. The CMPG leadership provided the freedom for the missile replenishment team to accomplish tasks. In addition, the CMPG senior leaders allowed the integrated product team leader to organize the team the way that would best support achievement of program goals and objectives.

Participant 6. The personnel assigned to the program had the training, experience, and resources needed to accomplish the mission. Leadership within the CMPG organization provided it all.

Participant 7. The CMPG leadership was very accessible. They offered assistance by pointing people in the right direction. If they did not have answers, the leaders would send team members to the individual or organization that could provide assistance.

Participant 8. The senior leaders empowered individuals to simply execute their assigned responsibilities. Some tasks, many of them routine, required management approval and were submitted accordingly and quickly processed.

Participant 9. Participant 9 said: "I had no tasks."

Participant 10. One of the most significant factors was the "track record" that the senior leaders had established with the Designated Acquisition Commander's office.

Participant 11. During the initial phase of the replenishment program, the CMPG leadership had no effect on ability to accomplish individual tasks. The senior leaders

worked during the 1998 Christmas holiday period to begin the planning; primarily a senior leader exercise.

Participant 12. The senior leaders empowered middle management and the integrated product team to use their considerable talent and initiative to manage and execute the replenishment program. The senior leaders elected to trust the personnel within the CMPG to manage the program to the best of their ability. It afforded many of those involved in the program the opportunity to affect the outcome in a positive and personally rewarding way.

Participant 13. The leadership of the CMPG Product Group Manager and the Boeing Program Manager made the Designated Acquisition Commander's job very easy. The team was able to affect the acquisition in a very timely manner. The time line went from the direction to replenish the missiles to a point seven months later when missiles were being put "back on the shelf." In acquisition terms, it was almost like tomorrow – it was "the speed of light." It could not have been done any faster.

Overall Significance of CMPG Leadership

Participant 1. The "salesmanship" ability of the senior leader within the Cruise Missile Product Group was very important in the early phase of the replenishment program. His leadership and communication skills were very significant factors with respect to clearly articulating the program strategy and gaining approval for the missile replenishment program to proceed.

Participant 2. Senior program manager leadership was very significant in the overall success of the replenishment program; more significant to the success of the 1999 program than senior CMPG leadership. The program managers showed strong leadership day-in and day-out to ensure success. More specifically program managers were instrumental in ensuring that team members knew their responsibilities and in providing supplementary direction as programmatic issues developed. Program managers, like the CMPG senior leaders, empowered functional team members with authority and responsibility to accomplish their responsibilities.

Senior leadership was instrumental in gaining external support and providing program managers the resources (manpower, funding, facilities, etc.) required to execute the accelerated program. Senior leadership also contributed to overall success by bringing in skilled manpower to supplement the core missile team.

Participant 3. The CMPG leadership set the tone for the replenishment program. The senior leader provided the initial guidance and motivation and maintained a high level of expectation for team success while encouraging and continuing to motivate throughout the 1999 missile replenishment program. The senior leader was instrumental in ensuring that all involved were “on the same sheet of music.”

Participant 4. In the day-to-day *execution* of the replenishment program, the CMPG senior leadership did not play direct significant roles. However, they played a significant role in the *success* of the execution of the program.

Participant 5. The Product Group Manager's leadership style was very significant in the success of the program. His leadership style allowed the team to execute the missile replenishment program "without getting in the way of the job." His style of leadership was consistent with some of the management principles such as directing, controlling, etc.

Participant 6. Overall, the CMPG leadership was significant because the organization, including the senior leader staff, was relatively small. The leadership provided the resources that the project demanded and challenged the missile team to focus on the goals and objectives of the program. Focus was important because of the short duration (accelerated pace) of the program.

Participant 7. Overall, the CMPG leadership was significant because of their efforts to understand the depleted missile inventory situation, their leadership in responding to the urgent request by developing a plan, and their leadership in presenting the plan to the Chief of Staff of the Air Force. Their leadership was key to accelerated replenishment of the Conventional Air Launched Cruise Missile inventory.

Participant 8. CMPG leadership was significant in the successful execution of the program during 1999. Simply stated, you must have someone to "run the ship." The senior leaders played a big part in the replenishment program because of their role in maintaining program focus. They were excellent in sharing "the big picture" with all program participants; instrumental to the development of an inclusive team environment where everyone felt important to the success of the project. Certainly, an important

aspect of the senior leader's responsibility was to ensure the team was focused on goals and objectives and making satisfactory progress. In addition, the senior leaders were instrumental in resolving issues that potentially affected cost, schedule, or technical performance of the weapon system.

Participant 9. The CMPG leadership role was significant in the execution of the Conventional Air Launched Cruise Missile Replenishment Program. The PGM focused on keeping the team on-track. He tended to be overly concerned at times, probably the result of being newly assigned to the missile organization. He didn't hesitate to jump in and lend the team a hand when he felt it was appropriate.

Participant 10. Overall, the CMPG leadership was very effective. The senior leadership was effective with respect to exercising the control function and maintaining accountability. The senior leaders maintained awareness ("pulse of the program") of program activities, day-to-day and week-to-week. The integrated product team had the support of the CMPG senior leadership and the reverse relationship was also strong (leaders support to the team). The relationship that existed between management and the team really gave the team a significant amount of authority and responsibility to run the program. There was a significant amount of initiative exercised by the integrated product team as a result. Support, accountability, and effective communications were key to establishing trust.

Participant 11. The CMPG leadership was “pretty influential.”

Participant 12. The laissez faire style of management empowered the team to execute the replenishment program. From a historical perspective (based on personal experience), it appeared as a lack of control (by management), but it was apparently the principle of empowerment that allowed the team to exercise their skills and discretion in managing the program. Without an opportunity to closely observe the senior leadership to discern whether direct control or influence was employed, it was clearly the right leadership style at the right time and with the right personnel.

Participant 13. The cooperation, spirit, and execution of the missile program from both the government and the contractor team was very impressive and gratifying. The program was one that was not business as usual. Instead, it was one that had to get done very, very fast. However, at the time the senior leaders in the Air Force honestly did not know if the inventory would be completely depleted prior to receiving additional missiles from Boeing. It turned out that about seventy remained and the inventory has since grown considerably. The on-going military encounter nevertheless provided a great impetus to succeed and the team did a marvelous job. The program, in the absence of leadership from both sides of the team (government and contractor) would not have been successful.

Research Question Three: Effectiveness of Management

Principles in the Cruise Missile Product Group

Effect/Significance of Program Planning on Success

The term “planning” was defined for purposes of this study as the process of developing the mission and objectives and determining how they will be accomplished.

Planning includes short and long term plans for the accomplishment of goals.

Participant 1. The contractor’s planning efforts had a significant effect on the success of the program. There was probably a large amount of planning within the Boeing Company; a lot of detail planning related to setting up a new manufacturing facility in a short period of time. Program planning by the government team did not have a significant impact on the successful execution of the replenishment program. The planning that was done by the CMPG leadership was not poor. It was emergency planning; the best that could be accomplished in a very short period of time. Initially, the major focus of the government leadership was to estimate the funding requirements and the schedules upon which the replenishment program could be executed. Conversely, the contractor, in a very short time frame accomplished a significant amount of detail planning.

Participant 2. Planning was absolutely a key factor in the success of the 1999 missile replenishment program. Early program planning was timely, correct, and well executed. Planning was likely the most critical management principle related to the

execution of the program. Very early planning occurred in only one and a half weeks prior to a program decision briefing that was soon thereafter presented to the Chief of Staff of the Air Force. The entire team, including the CMPG senior leadership, accomplished a great deal of work in a very short period of time; superb planning was key.

Participant 3. Planning was significant to success of the 1999 replenishment program. Without planning, that is, having a plan, it would be extremely difficult to produce a complex end product. Good planning was also significant for the missile program because it helped avoid the inefficient allocation of limited resources (funding, and manpower). Thorough planning was job-one on the missile replenishment program; team buy-in (acceptance and ownership) was also critical to the level of success that was achieved.

Participant 4. Program planning was absolutely a key element if not *the* key element contributing to the success of the missile replenishment program. A firm program plan provided a roadmap for successful execution.

Participant 5. Program planning was essential because it provided sequential steps and also provided a tool for tracking progress versus the plan. The missile replenishment plan was a very effective tool because it provided broad-based goals and time lines. The planning details were derived from the top-level planning. In summary, the replenishment program simply would not have been successful without the plan.

Participant 6. The replenishment program planning was accomplished very early. The key planning elements were complete prior to the senior level briefings in the Pentagon. The team was able to get a quick start on multiple activities as soon as the CMPG leaders returned from the Pentagon. Up-front planning was a key factor; it helped the team achieve program goals and objectives. There was not a long-term plan because it was an accelerated, short-term project. The plan helped the integrated product team maintain focus.

Participant 7. Planning was a very significant factor in the successful execution of the missile program. The level of success achieved, which included a very accelerated schedule, would not have been possible without proper planning. The plan was basically a roadmap that defined the course for all to follow; it enabled the team to move quickly, avoiding delay and confusion factors. The bottom line of course was that the weapons were completed and delivered to the customer much quicker than one would see on similar programs.

Participant 8. Planning was a significant factor in the successful execution of the program because of the accelerated nature of the program; the short time frame for delivery of the missiles was very unusual. The urgency was driven by the fact the United States was involved in a military conflict and the Conventional Air Launched Cruise Missile inventory had been seriously depleted. The up-front planning set the stage for the level of success achieved on the program. In addition, the senior leaders through planning and coordination eliminated many roadblocks that so frequently delay

programs; the path was cleared to maintain consistent progress. Planning was a team effort and everyone contributed. In summary, people were willing to put forth their best effort and that paved the way for success.

Participant 9. Planning for the missile replenishment program was very good. Certain tasks are required for any similar effort and the leadership recognized those very early. In essence, the early planning start went a long way toward building momentum and successfully completing the accelerated project.

The PGM was involved deeply enough in planning the replenishment program to assure himself and others that all the proper elements in the program plan were included. In addition, the PGM was very thorough, ensuring that the replenishment plan was accurate and complete.

Participant 10. Planning is always a significant factor. However, the Air Force has traditionally emphasized planning and control principles. Planning was important on the accelerated program because the plan had to be achievable, executable, and affordable while also providing a product that met the operational requirements of the Air Force (satisfaction of the customer).

The plan to complete the contract negotiations (“contract definitization”) carried some government program risk (cost) because the contractor was authorized to begin work on the replenishment program prior to final contract negotiations. In summary, the replenishment program planning was done very well and that in-turn

reduced the amount of cost risk on the program. Contract negotiations were completed in accordance with the program plan.

Participant 11. Program planning was a significant factor. It provided a direction for the program. However, the very best planning didn't always ensure success because often, other intervening factors came into play.

Participant 12. Planning was a significant factor in the success of the program. However, planning would be a significant factor in the success of any program comparable in size. The plan offered little margin for error or freedom for changes because the schedules were extremely "tight." An additional factor related to the success of the accelerated program, with respect to the time to complete the project, was the fact that an earlier replenishment program occurred in the early 1990s; some very useful history was available for adaptation. Goals and objectives for the program were established at the director and program manager levels (high-level planning). However, more detailed planning such as software integration (government portion completed at Tinker Air Force Base) was accomplished at the integrated product team level.

Participant 13. Planning was a significant factor in the successful execution of the program. Without planning, a successful acquisition is not possible. Personnel would not know what to do from day-to-day without planning but this was a very unique, tailored acquisition. The plan was to restart the line and produce exactly what we had been producing in past years; so it was very specific. The accelerated replenishment program was really short-term planning because there was really no long-term planning

to this specific acquisition. It was “get present missiles back on the shelf as soon as possible.” There was not a requirement to design a new missile or the development of a new weapon system that would have required a long-range plan. The leaders were asked what could be done in the short-term to fill the shelves as quickly as possible using the assets that were available for a missile conversion effort. The answer was to turn on a production line that had been shut down several years ago, bringing it back up to speed as soon as possible. In summary, planning was necessary and it was accomplished; but it was short-term rather than long-term planning. The goals were clearly articulated because it was very easy to understand what was needed; the goal was to convert the missiles and deliver them as fast as possible.

Effect/Significance of Organizing on Success

For purposes of this study, "organizing" was defined as the establishment of internal organizational structure of the organization (teams for example). The focus is on division, coordination, and control of tasks and the flow of information within the organization.

Participant 1. Prior to the initiation of the 1999 missile replenishment effort, the organizational structure was in place that included integrated product teams. Organizational structure was definitely a key factor in the execution of all that was accomplished on the accelerated program. The integrated product team structure placed the responsibility for accomplishing the work, through empowerment, at the team level. The Department of Defense adopted the integrated product team concept largely because

it had been very successful in industry. Again, the integrated product team structure consisted of team members with the requisite expertise. The integrated product team simply needed to be energized and empowered to accomplish the work at the team level. Work was accomplished as a team and not as individuals in the organization. The integrated product team concept promotes the exchange of information among multi-disciplined team members resulting in better decision making.

Participant 2. The CMPG leadership ensured that the missile replenishment team was comprised of the appropriate functional disciplines. In doing so, senior leadership equipped the cruise missile team with the requisite knowledge and skill to effectively organize program activities. The cohesiveness of the team was exceptional; it enhanced the planning and organizing of activities that crossed all functional disciplines.

The organization of personnel and work effort was important to success because without it operations would have been poorly timed and very haphazard. Organizing allowed team personnel to plan their daily activities and accomplish their individual tasks at the proper time in accordance with the program plan.

Participant 3. Organizing was significant to success of the program because of the many organizations involved, not just at Tinker Air Force Base, but all across the country. The replenishment program helped focus the efforts of all organizations; to know their roles and responsibilities and the timing of a multitude of program events.

Participant 4. Organizing was a significant factor in the success of the Conventional Air Launched Cruise Missile Replenishment Program during 1999. The

team was formed from branches (functional divisions) within the CMPG organization. The teams supported the program manager that was responsible for the specific missile program (integrated product team concept). The constant flow of information (aided by organization) was crucial to understanding goals and objectives and to the successful execution of the program.

Participant 5. Organization of the missile team contributed significantly to the level of success that was achieved. The team concept was very helpful with program execution; cross-functional communication among different teams ensured that all members were well informed. For example, the core team at one point in time was focused on acquisition and strategic planning and also preparing numerous briefings for the CMPG leadership. Organization and coordination were key because other team elements were simultaneously developing/executing other aspects of the program. The tempo of the accelerated program and the concurrence of program activities demanded a high level of coordination within the CMPG organization and outside supporting agencies as well.

Participant 6. The organizing management principle was significant as it related to the integrated product team and the organization of that team. Every functional discipline necessary to successfully execute the accelerated program was represented on the team. The integrated product team met no less frequently than weekly; vital communication of information occurred during those meetings. It was critical that all involved were continuously and consistently informed regarding the missile program.

Participant 7. The organizing principle was a significant factor because the replenishment program was a multi-organizational effort. The CMPG, the contractor, and senior level Air Force personnel outside the CMPG had to work closely together. The organization of the teams into a structure that, in effect, functioned as one team was very significant to the success of the replenishment program.

Participant 8. Organizing was important because it ensured that the people with the required skills were working the right issues at the proper time to execute the program plan. Organizing the program elements was also vital as a result of having many disciplines with specialists in each area. The replenishment team consisted of multi-functional team members and the optimum blend of skills and individual personalities was key to success. The free-flow of information among a knowledgeable and experienced replenishment team, including the senior leaders, was made possible through sound organization at the very beginning of the program.

Participant 9. Organizing had a very positive effect on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. An integrated product team managed each weapon system within the CMPG; each team had a lead (program manager). The personnel assigned to the replenishment program integrated product team were assigned specific functional responsibilities (program management, contracting, engineering, etc.). The team played a very large role in the success of the missile replenishment program. The oversight role of the program manager was critical

to ensuring all required tasks were thoroughly completed by the replenishment team in accordance with the program schedule.

Participant 10. Organizing was an important factor. However, it was complex because frequently the organizing function was split as a result of the specialization within functional disciplines (program management, contracting, etc.). Specialization within numerous functional organizations drove the need for coordination. For example, the CMPG was a stand-alone organization supported by contract support personnel (contracting officers and others) from the Directorate of Contracting. The program decisions related to the contract negotiation process appeared to be successful and effective. Staffing and organizing decisions within directorates were independent management decisions by their respective senior leaders. The functional directorates had the additional responsibility to provide matrix support personnel to the CMPG Integrated Product Team. The team was populated with multi-functional personnel from several directorates. Included in their many roles and responsibilities were the functions of organizing, managing, and coordinating all aspects of the weapon system program.

Participant 11. Organizing was important as it related to coordination of program activities and events and ensuring that information was getting to the right places when it was needed. The organizing process enabled team members to focus on program issues and quickly find solutions. However, a seemingly excess number of meetings and sometimes-fragmented efforts in the organization detracted from completing team member responsibilities.

Participant 12. Organizing was a significant factor in the success of the Conventional Air Launched Cruise Missile Replenishment Program. The principle of organizing was beneficial to the program with respect to bringing team focus on program tasks and issues that had previously been “stove-piped” to a single individual within the CMPG organization. The team was successful in assessing progress against goals and objectives. The team approach brought additional expertise to the replenishment program and aided in risk identification and problem resolution. Problems were openly reviewed and followed by corrective action when necessary. In addition, program risk assessments were helpful to the team and the senior leaders throughout the life of the program. In hindsight, team organization helped avoid making some critical mistakes on the replenishment program.

An earlier approach to organizing that was called Integrated Weapon Systems Management appeared to have created a multi-functional team composition of contractor and government personnel; it at least existed on the government side of program management. From past experience, the organizational approach adopted by the CMPG created a good working environment. However, it also created other problems associated with coordination of work effort critical to completion of assigned tasks. For example, when a team member was unavailable or simply failed to complete an assignment, then the entire effort was delayed. Nevertheless, the multi-functional team approach yielded greater success than in the past.

Participant 13. Organizing was a significant factor because it was such a tailored exercise. A completely new organization would be required for the development of a new cruise missile and a completely different type of planning structure. A completely different type of acquisition could call for a different style of leadership as well. This was a very tailored task.

The CMPG Organization that already existed, and supported multiple missile programs, established what was essentially a tiger team to do this very tailored and very exact acquisition. An Integrated Product Team was formed to support the replenishment program and the organization was very streamlined and very focused on the immediate task. It is easier to organize and focus a short-term objective than it is to organize and focus a long-term objective. In fact, in the face of a threat and with a task that has to be accomplished "tomorrow", it is very easy to focus both organization and purpose. So it had a great deal to do with the successful execution of the program.

Effect/Significance of Staffing on Success

For purposes of this study, the term "staffing" was defined as filling positions with qualified people to accomplish the work. Specific activities in this function include recruiting, hiring, training, evaluating and compensating the workforce.

Participant 1. Staffing had an effect on successful execution of the replenishment program. Unfortunately, within the Air Force, the full range of staffing options were not available even under the most demanding circumstances. The staffing available to support the replenishment effort was essentially limited to the personnel that were already

in place. However, the leadership was authorized to supplement the missile team and did so by hiring contractor personnel outside of the Air Force government team that had previous experience with the Conventional Air Launched Cruise Missile. Those individuals brought considerable experience to the program and were particularly instrumental in augmenting the technical team (engineering support). Qualified personnel with the requisite corporate knowledge were a significant factor in the success of the replenishment program. However, the program would have likely been even more of a success story had additional personnel been available. The contractor and the Air Force were limited in their ability to hire additional support personnel. The limiting factor was largely the lack of qualified, experienced cruise missile expertise. The personnel hired to augment the accelerated effort were tremendous assets. Training, compensation, and other employee related factors were not significant to overall success of the program.

Participant 2. Staffing was a key factor in the success of the 1999 program in that the team was staffed with a number of knowledgeable, senior level personnel – managerial, technical, and administrative. In addition, the team was supplemented with several less experienced but motivated team members that learned from the more experienced core team members. Previous training for the less experienced personnel that were added to the team was important; they brought the tools and gained the missile program experience as the program moved forward. Additional training was offered for the new members as program events/time permitted. The senior level experience of the core team was critical. The experience factor allowed the program to move forward and accomplish key objectives even with a shortage of personnel until less experienced

personnel were brought into the program and assimilated into the missile team. Many gained very valuable experience during the 1999 program, providing depth of experience for the CMPG organization (for future programs) as well as facilitating individual growth.

Participant 3. Staffing was a significant factor. Most leaders would advise that an entity could not be successful in any endeavor without a qualified staff. In addition, leadership must ensure that personnel are assigned to positions in the organization that fit the needs of the organization as well as those of the individual. Attention to training, especially with respect to new employees and those transferred from within the CMPG was important in order to assure long-term program office momentum. The bottom line was that the CMPG senior leadership empowered the work force to excel. They were available, well trained, experienced, and motivated - a formula for success.

Participant 4. Staffing was a significant factor in the success of the program. The knowledgeable and skilled people assigned to the replenishment program allowed the senior leadership to be more effective and actually made their job easier. In addition, it boosted leadership confidence that the program was going to be successful. The CMPG leadership did an excellent job of staffing the replenishment team positions with knowledgeable and skilled personnel.

Participant 5. Staffing was a very significant factor in the execution of the accelerated program. The Product Group Manager did two things to really strengthen the staff. He augmented the replenishment team with other personnel from within the CMPG

organization and he authorized middle management personnel to hire additional expertise (skilled non-government personnel). The CMPG would not have been able to complete the program within the established time frame without the supplemental manpower.

Participant 6. Staffing was indeed significant; a knowledgeable staff willing to “step up to the task” was crucial, especially with the downsizing in government that had been ongoing for some time. Each of the core team members had at least five years experience in the cruise missile arena. Interestingly, the supplementary personnel that were immediately infused took it upon themselves to quickly absorb program knowledge and acclimate themselves in order to increase their effectiveness.

Participant 7. Program staffing played a huge role in the success of the accelerated replenishment program. The CMPG organization was staffed with personnel in multiple functional areas that had related experience on other programs; that experience was leveraged considerably. The experience factor most assuredly helped accelerate planning and decision making functions.

Participant 8. Staffing was significant. The program was successful because the CMPG essentially had the right personnel in place; the proper mix of functional expertise and experience in areas such as program management, procurement, engineering, and equipment specialists. Some additional personnel were brought on board to augment the team. The personnel assigned to the team were experienced and that alone helped tremendously. In addition, the missile replenishment team worked very well together. The result was a very good product.

Participant 9. Staffing was a significant factor in the successful execution of the missile replenishment program. The CMPG senior leaders staffed the missile team with personnel that would ensure every required step would be completed. The leaders very deliberately assigned an adequate number of personnel to the project that also had the knowledge and expertise to maximize opportunity for success. The replenishment team was large in comparison to the other program teams within the CMPG, but the additional personnel actually made everyone's job easier.

Participant 10. In the contracting arena, a contracting officer had already been assigned to the Conventional Air Launched Cruise Missile Replenishment Program. However, the contracting officer was overloaded with work assignments. The senior leadership responded by requesting additional staffing from the Directorate of Contracting. The additional contracting officer assisted in the successful completion of the replenishment program contract negotiations. The difficult preparatory work completed by the contracting officer during the early program planning phase was key to the success of contract negotiations.

Participant 11. Staffing was not a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The personnel that were already in place just had to work harder and longer hours to get the job done. The program was never fully staffed with government employees. However, the senior leadership augmented the team with civilian contractor support personnel.

Participant 12. Staffing was a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The program was already staffed with experienced and competent personnel. In fact, most of the staff participated in an earlier missile conversion program (same weapon system) during the 1992-1994 time frame. The Air Force was fortunate to have the right set of people in the right place (the CMPG) at the most opportune time.

Additional staffing was actually a negative factor in the beginning primarily because the PGM had just arrived in the organization at approximately the same time that the replenishment program was initiated. However, over the course of time, the PGM was successful in realigning internal staff positions and also hiring additional contractor support personnel with the requisite experience and motivation to augment the replenishment program team. The PGM was also successful in gaining approval for some additional job positions to support the replenishment program. He had little authority in the government personnel arena with respect to adding government staff positions and personnel, but he affected it much more efficiently and effectively than his predecessors.

Participant 13. Staffing was significant from a Company perspective. It was a difficult task to get new people on board to learn/adapt to a legacy program and to get them to put out a quality product in such a short period of time. So it did take a lot of emphasis on the part of the Company to accomplish this task.

The Government program office did not have to augment the staff with additional people to carry out this task. The program office utilized the people and the resources that were available within the program office to manage and execute the program. The

integrated product team simply focused efforts and energies on this one task. The Company, on the other hand, had to hire and build up their workforce to accomplish the task. In summary, from the Company aspect, the recruiting, hiring and training was probably more demanding since the Government didn't augment the program with any new people. The CMPG senior leaders really just focused the integrated product team efforts in one direction.

Effect/Significance of Directing on Success

For purposes of this study, "directing" was defined as influencing people's behavior through motivation, communication, group dynamics, leadership, and discipline. The purpose of directing is to channel the behavior of all personnel to accomplish the mission while simultaneously helping them accomplish their own career objectives.

Participant 1. The most significant factor in the success of the Conventional Air Launched Cruise Missile Program was the fact that people viewed it as a National emergency. The government/contractor team sensed the urgency of need to replenish the cruise missile inventory and rose to the challenge.

The Product Group Manager (senior leader in the CMPG) played a significant role in the accelerated program. More specifically, his influence and motivational skills in directing the replenishment program and some very dynamic presentations to Air Force senior leaders to gain required approvals were vital to the success of the program. In addition, he was quick to praise the team or individual members for exceptional performance.

Participant 2. First and most foremost, having the right mix of experience on the team was critical to all that was accomplished during the 1999 accelerated program. Secondly, directing was very important with respect to achieving goals and objectives; ensuring that events occurred in the proper sequence and in the correct time frame. Proper direction was also important in order to ensure that program funds were properly allocated and controlled. Much of what was accomplished was the result of self-direction; experienced personnel simply knowing what was required within their area of responsibility and getting it done.

Participant 3. Directing was vital because it helped ensure that the program was progressing in a manner consistent with program goals and objectives. In a sense, the leader set the tone for the program with the initial direction. As the work proceeded, periodic reviews were held to evaluate progress and determine the need for additional direction. The directing function was paramount because of the time constraints on the missile program. There was little margin for error with respect to stated goals and objectives.

Participant 4. Directing had a positive effect, but the extent or level of significance was not clear. The morale of the workforce suffered at times and perhaps the senior leadership should have been more in-tune to that situation. However, the fast pace of the program probably drove most leadership attention/concern to programmatic issues; morale issues most likely “got lost in the shuffle.”

Participant 5. The directing management principle was key because the leadership team was establishing broad-based goals for the Conventional Air Launched Cruise Missile Program. The Product Group Manager provided motivation and facilitated communication among the teams. The motivational “seeds” were planted when he established goals and product expectations. He fostered a success-oriented environment for the missile team and key personnel outside the CMPG organization that were in a support role.

Participant 6. The significance of the directing management principle was substantial, especially as directing relates to communication among all the players charged with a role in executing the accelerated program. Directing from a senior leader standpoint was instrumental; the leaders ensured that the team maintained focus on the ultimate program goal. In addition, the experience gained from participating in the planning and execution of the accelerated, high visibility missile program was a significant benefit to all members with respect to career development.

Participant 7. The CMPG leadership directed the replenishment program with a high level of motivation. The leaders consistently pushed the team in the right direction, believing themselves that the project could be accomplished within the time lines that had been established. The senior leaders encouraged the missile team, even at times when issues or delays were encountered. They consistently stood behind the team and provided coaching and encouragement.

Participant 8. Directing was significant due to the fact that as many as fifteen team members were charged to execute the replenishment program. The team leader (and ultimately the senior leaders) had the responsibility of ensuring that all were working to achieve common goals and objectives. The team assigned to the replenishment program worked extremely well together toward common goals. The road to success was made easier as a result.

Participant 9. Directing played a role in the successful execution of the missile replenishment program. The PGM was the “engine” on the program and in his role, he made certain everyone stayed “on track.” Sometimes with projects of similar size and scope, issues arise which often lead to significant delays. The PGM understood and communicated the urgency of need to the integrated product team; the leaders provided a “blueprint” to follow. The PGM employed the directing principle in a more formal way during weekly staff meetings. The meeting was routinely used by the PGM to assess replenishment program progress against planning. When issues were encountered that required senior management attention, the PGM discussed the issue(s) to gain understanding and directed personnel toward expedient resolution. On occasion, PGM direction involved organizations outside the CMPG organization.

Participant 10. Directing was a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The directing function was carefully weighed and balanced with delegation of authority and responsibility. The “working level” (integrated product team members) had the requisite

knowledge to successfully execute all phases of the missile replenishment program plan. Progress against the plan was routinely reported to the CMPG senior leaders; they were very supportive of the team's work toward achieving goals and objectives. This feedback loop ensured that the senior leaders were aware of progress against the program plan and when necessary the opportunity to take corrective measures. The senior leaders were effective in that role. Their support helped ensure that major decision briefings to the Designated Acquisition Commander—necessary to gain his approval to proceed with the missile program—were successful.

Participant 11. Directing was a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program as related to the identification of required tasks, tracking progress, and identification and resolution of programmatic issues. However, most team members went about their work simply to get the job done; sometimes to the detriment of individual career objectives. The senior leaders seemed to focus more on advancing program goals and objectives and not enough on helping individuals reach career objectives.

Participant 12. Directing helped create an environment for productive work; and from that aspect, it was a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The directing function was also perhaps related to the senior leader's management philosophy of empowering the work force. The three senior individuals (director, deputy director, and

program manager) did not direct in the sense of micro-management; they were really not controllers per se.

The management approach to directing created a more relaxed work environment. There was less frustration, and therefore more time invested in productive activities. Although the senior leaders were successful in motivating the team and creating an informal relaxed work environment, their approach led to some frustration. Numerous programmatic issues may have been more efficiently and effectively resolved with a more directive approach by the senior leaders.

Participant 13. Directing was a significant factor, because the program was so focused. It was relatively straightforward to accomplish the directing part of the business. In retrospect, this was probably the area that made the greatest contribution to the program. It was really quite easy to focus people's attention when the Chief of Staff of the Air Force says, "go do something." The executives called for a joint meeting with the Government program office and the contractor. All the players were in the room at the same time that were going to work on the program – the Boeing Vice President and the Designated Acquisition Commander chaired the meeting. The Boeing Program Manager and the CMPG Product Group Manager participated and the group literally went through the program objectives and established program time lines. That summit was the major event that put the program on a path to succeed; from that point on, everything else followed. The accelerated program required day-to-day direction, motivation and communication by all participants. With purpose and objectives clearly established the execution was very, very focused and the team knew exactly what was required. The

joint team needed to get the job done and frankly, it was not something that was going to be done in five to ten years or during someone else's time; it was going to be done within a year and within the time frame of everybody there. Everyone in the senior level meeting knew that they were going to be held personally responsible for either making this or not making it happen. It is much easier to channel effort when the focus is very sharp.

Effect/Significance of Controlling

For purposes of this study, the term "controlling" was defined as the establishment of performance standards based on mission objectives; measuring and reporting actual performance; comparing the two; then taking appropriate action based on the results.

Participant 1. Controlling was not a significant factor in the success of the program as a whole. During the early days on the program, motivation to succeed was high and progress was being closely monitored/measured. Later in the program, when motivation seemed to decline somewhat, the controlling functions that highlighted missed program milestones didn't seem to be a factor in changing the direction of the program.

Participant 2. The controlling function was a really important tool for the replenishment program. Planned evaluations of various aspects of the missile program were instrumental in measuring progress with respect to scheduled events and milestones. The reviews and measurement tools employed by the CMPG were in place, and in fact, were standard business practices in the CMPG organization prior to the initiation of the

replenishment program. In addition, the need for frequent measurement and feedback was made even more compelling due to the accelerated pace of the program and the addition of younger, inexperienced personnel on the team.

Participant 3. Controlling was an important management tool. Progress was monitored during all phases of the program to ensure that all efforts were moving in a direction consistent with achieving program goals and objectives. Program success was dependent upon having control tools in place to monitor progress against objectives and, when necessary, the supporting data needed for corrective measures.

Participant 4. The controlling management principle was definitely a significant factor in the execution of the Conventional Air Launched Cruise Missile Program during 1999; and the CMPG leadership played a significant role in the that particular area. The organization had mission objectives and performance parameters against which the program was evaluated. The senior leader's role was to use the measurement tools to monitor progress versus objectives and provide additional guidance when needed.

Participant 5. The controlling principle contributed to successful execution of the missile program. The control function was accomplished by using various tools to track and measure program progress against planning objectives. The information and data yielded by the controlling functions enhanced communication among team members and between the missile team and the CMPG senior leadership. The control process also helped focus the efforts of the team; the information (schedule, cost, technical, etc.) provided periodic "snap shots" of performance to-date versus goals and objectives.

Participant 6. The controlling function was significant in the success of the program but not in the context of controlling the actions of the missile team. The program was controlled, however, by employing management tools that compared actual performance with mission objectives. The feedback provided by the control processes provided valuable information to the team and senior management regarding progress. The measurement tools helped maintain focus and momentum in areas that were vital to program success.

Participant 7. Controlling was a significant factor and it contributed to the success of the mission. One of the replenishment program objectives was to accomplish the work in a limited amount of time, and that was clearly achieved, a direct result of effective control mechanisms on the Conventional Air Launched Cruise Missile Program.

Participant 8. Controlling was a significant factor in the success of the missile replenishment program. However, controlling was an important function for both Government and contractor organizations. Both entities employed control processes to the extent that information was continuously available to facilitate program evaluation and corrective action when required. Problems were resolved very swiftly. The measurement of performance was vital to ensure that a quality product was being produced and sufficient progress was being achieved against a very accelerated program schedule.

Participant 9. Controlling was not very significant in the successful execution of the replenishment program. The controlling principle played a role but it was not large.

The planning and organizing functions paved the way for success of the program. After that, everything seemed to fall into place. When problems were encountered, the PGM was there to assist and/or encourage the team to move ahead.

Participant 10. Controlling was a significant factor as it related to accountability. The controlling principle was very ingrained into Air Force procedures. For example, in the contract negotiation process, senior management delegated a limited amount of authority for decision-making to the contracting officer. Decisions beyond the authority of the contracting officer were briefed to higher levels of management for approval - a control process. In a sense, the controlling function enabled the integrated product team to plan and execute the program and report progress and issues to higher management. These activities were elements of the controlling function.

Participant 11. Controlling was a significant factor in the success of the program. The function was important because of the short time line to award the contract and soon thereafter begin the delivery of refurbished missiles to the customer. More specifically, the periodic review of schedules, financial status, programmatic issues, etc., helped ensure that the program remained on schedule. In addition, the control function helped ensure that corrective actions were quickly pursued when required, which in turn minimized program delays and non-productive effort. In summary, the control process aided the program through review and assessment and provided confidence that the program was proceeding according to plan.

Participant 12. The controlling function was not particularly visible. Therefore it was difficult to determine the degree of significance on the program. It was possible that little control was needed to execute the program; it was after all a relatively successful project.

Program objectives, metrics, and other program control tools were not visible during senior management staff meetings. Historically, white papers, budget status, cost and schedule performance, and issue status were standard items for management review during staff meetings. However, the replenishment program integrated product team did employ the aforementioned control tools. It is possible that senior management empowered the integrated product team to the extent that the leadership delegated many of the control functions to the “working level.”

Participant 13. Controlling was a significant factor because the program was schedule and threat-driven and so the controlling element was also very important. Metrics are absolutely required and necessary for the success of any program. However, care must be taken to ensure that metrics drive the desired behavior because people will respond to what is being measured. Measuring the wrong thing will elicit the wrong response; measuring the right thing will yield the desired response. In the accelerated missile program, the key metrics were the quality and the timeliness of the product. The cost of the product was not a forcing function metric because the Air Force absolutely needed the weapon systems as soon as they could be delivered. On the cost side of what is called the acquisition triangle (cost, schedule and performance), the cost side was not quite as rigid as the other two sides - the accelerated program was going to cost what it

was going to cost. The product had to be what it was in the past, exactly like it was in the past and it had to be done as soon as possible so schedule became a very, very important metric to the program office. It was not that cost was unimportant but the program was not cost-constrained as much as it was schedule and quality-constrained.

Research Question Four: Influence of Management Principles on

Execution of the Conventional Air Launched Cruise

Missile Replenishment Program

How Planning Influenced Ability to Succeed

Participant 1. The amount of time available for planning was very short. The primary influence was simply the urgency of the need but the urgency served as a strong motivator to the Conventional Air Launched Cruise Missile team members. The CMPG was responding to direction by the Chief of Staff of the Air Force to replenish the Conventional Air Launched Cruise Missile fleet.

Participant 2. Planning provided a clear path for execution of replenishment program responsibilities at all levels with the CMPG organization. Planning and then executing according to the plan (with minor deviations) was very critical to the level of success that was achieved.

Participant 3. The plan was the “roadmap” for the 1999 Conventional Air Launched Cruise Missile Replenishment Program. It was important to adhere to the missile plan while acknowledging that circumstances could (and, in fact, did) require

adjustments to planning. Effective planning was indeed the key to success; the common denominator upon which all effort was based.

Participant 4. The leadership team had a good plan in place and it made everyone's job easier. Early planning eliminated the guesswork.

Participant 5. Program planning was essential because it provided sequential steps and also provided a tool for tracking progress versus the plan.

Participant 6. The planning factor was significant with respect to maintaining the integrated product team's focus on goals and objectives.

Participant 7. Top level planning enabled more detailed planning at lower levels in the organization. The planning activity outlined the steps to be taken; the plan was informative (provided focus).

Participant 8. The purchase request process (preliminary documentation required to execute a legally binding contract between the government and the contractor) required precise planning and that was exactly what was achieved on the missile replenishment program in 1999. The up-front planning by the senior leaders for the replenishment program enabled rapid and precise execution of the contractual requirements. In fact, poor planning would have delayed the contractual activities significantly and, in turn, the entire program schedule.

Participant 9. The participant said: "I had none."

Participant 10. The program plan helped establish priorities. It also provided the methodology upon which to focus individual and team efforts. The program priorities that were established by the PGM really brought focus to the team and communicated clearly what must be accomplished in order to be successful.

Participant 11. Planning “set the table” for certain events to occur. Once those events were set in place, the integrated product team then executed their responsibilities in accordance with the plan.

Participant 12. The initial software plan was not executable. The planning process, however, focused attention on resolving software interface problems. The accelerated pace of the replenishment program offered what could be described as “just in time” planning. Historically, much more time was allowed for planning activities and events that would occur many months later. However, and again referring to software planning only, planning preceded the actual events by only a month or two. It was a different planning approach and viewed negatively by some, but the effort was nevertheless successful. In fact, the program most likely could not have been planned any other way than “just in time.”

Participant 13. The success of the Designated Acquisition Commander is dependent upon the success of the program office. The program office could not have been successful without planning, so it was paramount.

How Organizing Influenced Ability to Succeed

Participant 1. The IPT structure provided the flexibility for mid-level managers to serve more effectively in dual roles. More specifically, mid-level supervisors and functional leaders (engineering, program management, etc.) could accomplish staff and supervisory responsibilities without devoting significant time to the work being accomplished by the replenishment program IPT. The focus of the IPT was to execute the day-to-day tasks in conjunction with the contractor; tasks specifically related to the replenishment of the conventional cruise missile inventory. Also key to the success of the program was the flow of information within the cruise missile organization, both horizontally and vertically. That was something that was fostered during weekly staff meetings with the senior leadership. Finally, the IPT leader maintained a top 10 list of issues that was presented to the CMPG leadership on a weekly basis; the IPT met at least weekly.

Participant 2. The responsibility for team organization involved ensuring the proper mix of knowledge and experience. Organizing team personnel facilitated the efficient and proper execution of program requirements in order to meet program objectives.

Participant 3. Organizing influenced responsibilities in that the entire replenishment program was well organized and that translated into clear roles and responsibilities. It provided the organizational framework from which to execute the program.

Participant 4. Good organization helped make everyone's job easier. The missile team within the CMPG was staffed with personnel having the proper mix of knowledge and skills required for success. Managers and supervisors were able to rely on team personnel for program execution and for the flow of information and data that was important to the senior leadership.

Participant 5. Organizing was essential for team leaders. It would have been impossible to fulfill a leadership role on the missile program without it.

Participant 6. Organizing to facilitate effective communication was important. The need to communicate effectively could not be over-stressed. Some teams (based on personal experience) have had less than effective communications.

Participant 7. The organizing process provided structure and focus that enhanced working relationships between Government and contractor team personnel.

Participant 8. The preliminary work to organize the missile replenishment program by the senior leaders helped reduce the probability of error regarding the management of the program which also reduced the probability of cost overruns and other negative consequences. In the contracting arena, mistakes that sometimes result from poor organization ultimately result in contract changes and inevitably create program delays; this was clearly not the case with the Conventional Air Launched Cruise Missile Replenishment Program during the 1999 time frame.

Participant 9. The participant said: "I had none."

Participant 10. All the “tools” needed to complete the job were provided.

Participant 11. The organizing function had little to do with some program activities. In areas such as contracting, guidelines were provided that the contracting officer was required to follow; some mandated by law.

Participant 12. A number of personnel that supported the replenishment program had the opportunity to see it from a much broader perspective to include, for example, software development, logistics support, equipment management, and engineering management. In light of that broader view, the interdisciplinary organizational approach adopted by the CMPG was a significant influence in the success of the program. In addition to and beyond the organizing influence, the program was aided by very experienced, competent personnel.

Participant 13. Again, the responsibilities of the Designated Acquisition Commander are contingent upon the success of the program office. Therefore the fact that this was organized in the way it was enabled the Designated Acquisition Commander to be successful in carrying out oversight responsibilities for the missile program.

How Staffing Influenced Ability to Succeed

Participant 1. Lack of staffing probably hindered the first-line supervisor’s ability to succeed as a result of the reallocation of resources (manpower). In this particular case, personnel had to be shifted from other programs in order to support the urgent need to replenish the Conventional Air Launched Cruise Missile fleet. In summary, staffing was

an issue that negatively affected the other missile programs within the CMPG organization.

Participant 2. The CMPG leadership had to “shuffle” some personnel within the organization to strengthen the replenishment team. It was important to guard against creating personnel shortages on other programs within the CMPG (Air Launched Cruise Missile, Advanced Cruise Missile, and Harpoon Missile Programs) while attempting to strengthen the Conventional Air Launched Cruise Missile Team.

Participant 3. A well-trained and knowledgeable staff was equipped to handle routine tasks and also quickly address issues that frequently (if not resolved) would have been major impediments to reaching program goals and objectives. The well-coordinated efforts of the entire staff greatly enhanced the flow of vital information for not only the senior staff but also for middle management and the missile replenishment team as well.

Participant 4. The knowledgeable and skilled people assigned to the replenishment program allowed the senior leadership to be more effective and actually made their job easier.

Participant 5. Once again, the missile replenishment program could not have been executed in the accelerated time frame without the additional staffing.

Participant 6. It was important to recognize also that the entire team was receiving compensation and valuable training; those factors also served as motivation to some degree.

Participant 7. Staffing was influential in the sense that many team members had worked together for a prolonged period of time. Therefore the stability factor associated with staffing was very advantageous with respect to the day-to-day interface with the missile team as well as others outside the CMPG organization.

Participant 8. Staffing was very helpful in that the personnel required to initiate the program were in place at the time the direction to proceed with the replenishment program was received. More specifically, the personnel with the information that was needed to begin the planning phase of the program were resident within the CMPG. Also, no training was necessary in some functional areas. The replenishment program got off to a fast start because personnel were available to tackle any issue or question.

Participant 9. The participant said: "I had none."

Participant 10. Wise staffing decisions in support of the Conventional Air Launched Cruise Missile Replenishment Program were demonstrated in the excellent work accomplished by those assigned to the accelerated program. Team support in developing tools, reports, and other products needed to support the contract negotiation process were excellent.

Participant 11. Staffing didn't help in any way. The program didn't have the staff.

Participant 12. The important aspect with respect to staffing influence was that personnel were experienced. In addition, each individual on the multi-disciplined team

possessed the necessary skills and they had the “right” attitudes. In a sense, the sum (team composition and characteristics) was perhaps greater than the parts. It was a pleasure to work with those people (the Conventional Air Launched Cruise Missile Program Team).

Participant 13. Again, the responsibilities of the Designated Acquisition Commander are directly linked to the success of the program office.

How Directing Influenced Ability to Succeed

Participant 1. The senior leadership in the CMPG worked closely together during the 1999 replenishment effort. Therefore directing was not a significant factor between senior staff and mid-level managers because much of the early planning was accomplished in a team approach that included the senior leaders. Similarly, directing was not extremely significant between mid-level managers and functional team members because the personnel were essentially self-motivated. The team quickly recognized the urgent need for the missiles and responded with a strong sense of commitment.

Participant 2. Directing was not particularly significant with respect to the program’s success. However, it was an integral part of day-to-day activities for all personnel involved in managing the program.

Participant 3. Directing was the management principle that ensured goals and objectives were clearly communicated to all involved in the replenishment program. From that point on, it was simply a matter of executing the missile program in accordance

with guidance provided by the CMPG leadership. Clear, consistent direction throughout the organization was vital to the high level of success.

Participant 4. Directing had no influence on ability to execute individual assigned responsibilities.

Participant 5. Directing was essential to missile program success. The Product Group Manager provided clear program direction. Simply stated, it would have been impossible to accomplish program goals and objectives without subordinate personnel having clear direction from upper management.

Participant 6. The directing function, from the most senior leaders in the chain-of-command down to the core team members, served as a constant reminder to everyone involved in the program that they had a unique opportunity to participate in accomplishing something really special. The replenishment program was a fast-track program that demanded a very focused and intense effort to meet the goals set by the senior leaders.

Participant 7. Directing was very influential and beneficial as it related to communications among team members and management and with other agencies including those outside of Tinker Air Force Base.

Participant 8. Directing was important because it assisted in getting the team members focused and moving in the same direction. In addition, everyone contributed

and shared in the planning. The missile replenishment team shared a great deal of camaraderie with one another and adopted a “let’s move forward and go get it” attitude.

Participant 9. The participant said: “I had none.”

Participant 10. The success of the contract negotiation phase was just one important element of the program plan. The directing function played a vital role in the success of contract negotiations and many other program elements. Clear direction enabled the integrated product team to focus and execute all phases of the replenishment program.

Participant 11. The directing influence played a significant role by placing special emphasis on the Conventional Air Launched Cruise Missile Replenishment Program. The team members responded to the direction provided by the leaders and simply accomplished their responsibilities.

Participant 12. There were both positive and negative influences with respect to the senior leader’s directing influence on executing assigned responsibilities. From a negative viewpoint, there was at times, a lack of direction, but the organization grew and in effect filled the gap. However, on the positive side, the senior leaders empowered the team to accomplish the mission.

Participant 13. Again, directing is important to success and a Designated Acquisition Commander has yet to succeed when the programs for which the Commander is responsible fail.

How Controlling Influenced Ability to Succeed

Participant 1. Controlling was important in terms of understanding where the replenishment program was with respect to progress versus where it was scheduled to be at any given period of time. It was also important, as a supervisor, to have standards in order to measure the team's performance; a "necessary evil," but key to objectively evaluating performance. Employee evaluation also provided valuable feedback to team members by conveying the leadership's level of satisfaction or dissatisfaction with job performance.

Participant 2. The controlling process enabled leaders and managers to view progress against plans and to take corrective measures when necessary. Thus, as a management tool, it was of paramount importance to the senior leaders in the organization. Most tools available to the staff were automated and available for review at any time. Formal internal program reviews were conducted on a monthly basis; the reviews provided an in-depth look at progress and issues.

Participant 3. Control was important because it provided team members the realization that what they were doing was important and that their individual and collective progress would be reviewed by others including the senior leaders on a recurring basis. It wasn't particularly difficult or stressful because the expectations throughout the program were clear; simply a matter of executing and then reporting results.

Participant 4. The controlling principle absolutely influenced the ability to successfully execute assigned responsibilities.

Participant 5. The controlling function was beneficial because it increased awareness of leadership, team and individual team member performance and also helped highlight near-term planning needs.

Participant 6. The controlling function was beneficial because it sharpened the team's focus on goals and objectives. More basically, it highlighted for all participants just how quickly activities needed to be completed in order to ensure success and what organization or team member was responsible.

Participant 7. The participant said: "the same as the others."

Participant 8. The controlling principle was particularly helpful with respect to schedule control. Performance relative to scheduled activities and events provided senior leader and team member visibility regarding progress versus goals and objectives. During the execution of the program when progress was unsatisfactory (relative to schedule performance), the team was able to take immediate corrective action. In addition, the schedule visibility provided supervisors a tool to aid in employee development and evaluation; it served to highlight individual and team performance.

Participant 9. The participant said: "I had none."

Participant 10. The controlling function helped focus the team and individual member activities. Controlling activities embraced by management aided the execution of the replenishment program by clarifying roles and responsibilities on the team.

Participant 11. The control process helped the team assess their progress toward meeting program goals and objectives; it helped focus the efforts of everyone as the program moved forward. It also served to highlight problem areas where assistance from senior leadership or other supporting organizations was required.

Participant 12. The authority and responsibility delegated by upper management to middle management and the integrated product team created an environment that allowed great latitude in decision-making. The senior leaders empowered the replenishment team to execute the program and thus allowed the team to gain a level of job satisfaction that was rare and also very rewarding.

Participant 13. A Designated Acquisition Commander cannot be successful when a program fails, therefore the influence of the controlling function was obvious.

Research Question Five: Urgent Need or Other

Factors Contributing to Success

Urgent Need Factors Attributable to Success

Participant 1. The urgent need for additional missiles was probably the most significant factor regarding the success of the Conventional Air Launched Cruise Missile

Replenishment Program during 1999. The most senior leaders in the Air Force downward-directed the accelerated program and clearly conveyed the sense of urgency. The CMPG was provided required funding to accelerate the replenishment effort to the maximum extent possible. On the other hand, the management principles embraced by the CMPG (planning, organizing, directing, etc.) did not change to accommodate the accelerated program. It was important, however, that management principles as well as team personnel were in place in the very beginning.

Participant 2. The program was unusual in that the Air Force suddenly found itself with a critical shortage of weapons needed to conduct warfare. The shortage, a result of multiple military conflicts, placed the CMPG under a “spotlight.” The challenge from the most senior Air Force leaders was to replenish the Conventional Air Launched Cruise Missile inventory in the shortest time possible. In addition, the urgency of need enabled the government to quickly provide the required funds. Under normal circumstances, this process alone was very lengthy as new funding required Congressional approval. Finally, the CMPG organization was successful because some of the policies and rules were eliminated or relaxed in order to expedite the contracting process. Work by the contractor to begin missile refurbishment could not begin until a contract existed between the Government and the contractor.

Participant 3. A very large factor contributing to success was gaining the cooperation and support of organizations outside of the CMPG. The missile program encountered some resistance from outside agencies; but the leadership was eventually

successful in working through issues and gaining their support. The organization of people involved in the program was the most significant factor in the successful execution of the missile program during 1999.

Participant 4. The missile replenishment program had visibility at the highest levels in the Air Force and when a program has that level of attention, many things can be accomplished quickly that otherwise could not. When the Chief of Staff of the Air Force says that he wants something, he generally gets what he wants. These factors enabled the CMPG leadership to navigate around some roadblocks that under other circumstances would not have been possible.

Participant 5. The urgent need to replenish the Conventional Air Launched Cruise Missile fleet was the compelling force that drove a high level of individual and team performance. Recent military operations expended a large percentage of the missile inventory.

Participant 6. The short supply of missiles that had been described as the “war fighter’s weapon of choice” was a major motivational factor. The team sensed that it was a volatile time (two recent military conflicts); the military forces needed additional weapons.

Participant 7. The nation was already involved in a military conflict when the direction was received to accelerate the program. In many eyes, the Conventional Air Launched Cruise Missile was viewed as “the war fighter's weapon of choice.” Then,

when the inventory levels dropped well below one hundred missiles, the urgent need to respond rapidly was realized by senior Air Force leaders; and they subsequently directed the accelerated replenishment program in early 1999.

Participant 8. The urgent need for additional missiles brought the team together and they focused on the challenges ahead. The team was goal-oriented, knowing what had to be done. In a team manner, everyone picked up their share of responsibility and just kept moving forward.

Participant 9. The bottom line was that the Air Force had recently expended quite a number of Conventional Air Launched Cruise Missiles during recent conflicts and very few remained in the inventory. The decision to initiate the accelerated replenishment program in early 1999 was not made by the CMPG organization. The decision to proceed was made in the Pentagon, and the direction to the CMPG included a message of urgency. However, after the decision to begin the program and to accelerate it to the maximum extent possible, thorough planning and organizing by the CMPG were major factors that carried the program a long way toward success.

Participant 10. The urgency generated problems that had to be overcome. The bureaucracy tended to slow the pace demanded by the senior leadership. The CMPG senior leadership was instrumental in helping the integrated product team overcome problems and challenges that were encountered as the team reacted to the urgent need for additional missiles.

Participant 11. The urgency was created when the inventory level was reduced as a result of recent military conflicts. The mission of the CMPG was to support the war fighters with Conventional Air Launched Cruise Missiles. The standoff capability provided by the long-range missiles avoided having to put aircraft and military personnel at risk in the skies over enemy territory; thus the weapons were highly desirable especially during the initial days of a military conflict.

Participant 12. The Conventional Air Launched Cruise Missile inventory had been depleted without attention to planning for future production capability. As a result, a sense of urgency quickly arose because the inventory had been greatly reduced. Funding for projects similar to this required strong advocacy and a lengthy review and approval process at very high levels within the Department of Defense. However, the review and approval process for funding approval for the accelerated replenishment program was swift; again driven by urgent need.

Another factor that contributed to the success of the replenishment program was the strong and expedient support from agencies outside of the CMPG organization. The PGM and his team and the contractor's team would not have enjoyed the level of success that was achieved without the solid support of many other individuals that had key supporting roles. The superb effort of many people working toward an urgent and common set of goals and objectives was fundamental to success.

Participant 13. The urgent need was probably the major factor that created the focus on this program. The Chief of Staff of the Air Force took it as a personal issue that

made it very, very focused. The Chief cannot take that approach on every initiative; but in this case he chose the cruise missile program; and that level of attention tends to be a factor that drives programs such as this. The sincere and personal commitment from the top leader in the Air Force to get the job done contributed to the success of the program.

Other Factors Attributable to Success

Participant 1. The only other factor attributable to success was that it was a doable program.

Participant 2. The people involved in the program were very concerned, very interested, and very motivated; they were also talented and capable. From top to bottom in the CMPG organization, all were committed to doing everything possible to ensure success; the goal was crystal clear. Many impediments were removed to enhance the opportunity to significantly accelerate the missile program. It was an experience that will continue to be a positive influence for many years to come for all that participated.

Participant 3. The political factor was an issue at times. The accelerated program would not have been nearly as successful without strong political support from very senior personnel within the government; strong political support for immediate funding was vital for the early start. A perceived National crisis, high visibility of the project including personal visibility, and the general high priority of the work were also factors related to the level of success achieved.

Participant 4. The team dynamics of the Conventional Air Launched Cruise Missile Team were unique. The collective team was concerned for the success of the replenishment program; getting the war fighters what they needed as soon as possible. The urgency of need relative to national defense may have been a factor related to team dynamics. The weapon system was in the forefront during recent military conflicts and as such further embellished a sense of team pride. The missile team embraced and responded to their critical role in making a direct contribution to the defense of the United States.

Participant 5. Dedication to duty and a strong sense of patriotism also contributed to the success of the replenishment program during 1999.

Participant 6. Patriotism was a factor in the success of the program. The people involved recognized the magnitude of the problem and clearly felt a sense of pride and patriotism in rising to the challenge. Some of the most senior leaders in the Air Force challenged the team to do their very best.

Participant 7. The program briefing given by the PGM at the Pentagon in early 1999 was a team effort. The replenishment plan was the product of the combined efforts of the CMPG leadership and the contractor team leadership. The close working relationship that had been established between Government and contractor personnel was vital to the development of an executable plan and the presentation of the plan to the decision-makers in Washington D. C. Mutual supporting relationships had been

established; and the two organizations spoke with one voice to the senior decision-makers; this also was a key factor in the success of the program.

Participant 8. No other factors were significant in the success of the project. However, most people that worked in the cruise missile organization were professional in executing their responsibilities and everyone was working toward a common goal. The most important factor was that the missile team got a quick start and very rapidly moved ahead. Additionally, the replenishment team understood the importance of the mission at hand; the team clearly understood they were not involved in a game. The United States military was involved in a war and the troops needed the weapon system.

Participant 9. Fortitude was a factor that also contributed to the success of the accelerated program. It was very frustrating for a period of time because the CMPG team was positioned to initiate the program with the contractor, but other outside agencies were gating the program. There was a perception that some of those outside organizations simply didn't comprehend the urgency of getting the program started.

Participant 10. The leadership style and the atmosphere of the program and organization contributed to pulling the program together. The leaders directed the team to common goals and encouraged individuals to freely use their initiative to move forward in a team environment.

It was not uncommon to have competing priorities in similar multifunctional teams comprised of personnel from independent organizations (matrix team composition). For example, oftentimes friction among team members and/or

organizations has led to counterproductive activities or efforts not aimed at achieving desired program goals or objectives. This was not the case with the cruise missile replenishment program in 1999. The atmosphere of the program was noteworthy – clearly goal-focused. The style employed by the many managers involved in the program was very effective and contributed to the success of the program.

Participant 11. Congressional support for the accelerated program was important. The program would have not have moved very far along without higher level support within the government. There was “buy-in” within other levels of government in addition to a high level of commitment by the integrated product team that contributed to the success of the project.

Participant 12. There were other factors that contributed to the success of the 1999 replenishment program:

- The program was executed previously during 1992-1994.
- The same contractor that designed and produced the missile was awarded the contract to do the replenishment (conversion from nuclear to conventional capability).
- The contractor had some of the personnel in 1999 that were involved in the 1992-1994-conversion program. The contractor had an experienced team.

- The contractor also placed a lot of emphasis on this program. Factors included company loyalty, pride in workmanship, and a sense of national urgency.
- Some of the same personnel that had executed the 1992-1994 program were still within the CMPG organization and available to support the 1999 replenishment program.
- Some of the associated tasks that were needed to accomplish the replenishment program in 1999 were actually not a part of the program. They were ongoing studies or modifications to the missile that were in process since 1994. The replenishment program would have taken additional schedule time and funding had those efforts not been underway.
- The replenishment program in 1999 was almost identical to the 1992-1994 program; however, the production facility including tooling and equipment was relocated from Tennessee to Missouri.

Participant 13. Politics were not a visible factor, excluding any consideration of the succession of military conflicts during the time period. However, the Boeing Company was a factor in that the Company wanted to remain pre-eminent in the cruise missile business. Part of Boeing's reputation stems from the fact that they are pre-eminent in the cruise missile business today and clearly desired to maintain their position in the market place. Without question, that is a personal and very powerful motivating factor for a company.

The people who were a part of the program office at Oklahoma City had a lot of personal pride and they also wanted to do a good job. Frankly, six or seven years ago no one really thought that the cruise missile was much of a big deal. The missile was kind of a weapon from a by-gone era. Then, all of a sudden, it was the war fighter's "weapon system of choice." The CMPG was thrown into the limelight with a weapon system that is in high demand; and that visibility is intoxicating. The entire team really got into it and really did a marvelous job; it excited them too. The realization was that all of a sudden many very prominent people in the business were paying attention and the "spotlight" was on Oklahoma City and the missile program. It was a very exciting program. War provided an external adversary and the external adversary became one that people rallied around and that definitely played a role. There was a perception that the United States Military needed the weapon system and that many people were depending upon the cruise missile being there.

The pace of the program is much different today; it is a non-crisis tempo. But the excitement remains in the program office. If an organization can generate this type of excitement, this type of urgency, and this type of enthusiasm, people would love going to work and spending twenty-four hours a day at it.

Discussion of Findings

Discussions of the findings in this section of the study provide a summary of the findings and are related to each of the broad research questions provided in Chapter I. Where appropriate, the number of participants from the total sample population that

believed a characteristic or factor was significant to the success of the program is provided. A further discussion of these statistics and a reference table in matrix format is provided in Chapter V.

Findings Related to Research Question One:

Leadership Characteristics

CMPG Leadership Role Findings. Twelve of thirteen participants that were interviewed reported that the CMPG leadership played a significant role in the successful execution of the 1999 accelerated Conventional Air Launched Cruise Missile Replenishment Program. However, one individual made the distinction that the senior leadership played a significant role in the *success*, but not the *execution* of the program.

The most frequently reported contribution by the leadership occurred very early in the program. The senior leaders responded very quickly to the initial direction to plan an accelerated missile replenishment program. The leadership accomplished a number of significant activities. Most notably, four participants identified a series of briefings that the senior leaders provided to the Air Force decision-makers; briefings to very senior officials that were mandatory to gain approval and begin the program. Their most significant role appeared to be gaining approval to begin the replenishment program. The leadership role of “setting the tone” for the replenishment program was also prominent in the data. The absence of unnecessary pressure and guidance upon the program manager was key; the leaders allowed the team considerable “freedom” to execute the program.

An emphatic perspective was offered by one participant regarding the joint nature of leadership in the program between the CMPG Product Group Manager and the industry counter-part within the Company, the Boeing Program Manager. The program was a partnership between the Company chosen to do the work and the Government; it was difficult to separate what the Government did from what the company did. Any or all success or failure on an acquisition program can be traced to the entire chain of leadership.

Senior Leader Style and Characteristics Findings. The participants described the senior CMPG leadership style of management by revealing an assortment of observed characteristics. A unique perspective was offered that illuminated a dual leadership role - a direct leadership (traditional leadership role) and also a role to help build consensus of thought. The leadership style had to be one of explaining the rationale of why the leadership chose a certain direction rather than just blind acceptance by the people. The most common characteristic identified by the participants was the senior leader's willingness to empower the work force to execute the program. The data summarized below was indicative of a leadership approach that embraced the empowerment principle:

- The CMPG senior leader's style allowed the program office team who were experts in planning and Boeing who were experts in building the missiles to *do their respective jobs*.
- The CMPG leadership style was to lead by example; not micro manage the team members but rather, to lead by *allowing the workforce to carry out daily responsibilities* in accomplishing assignments.

- The leadership style could be described as *non-intrusive*.
- They were involved in execution, but essentially *gave the team the freedom to get the job done* without much interference.
- They *gave the team the responsibility to execute the program*; their leadership style was very effective.

Findings Related to Research Question Two:

Leadership Influence

Leadership Affect on Assignments Findings. Empowerment by the senior leadership continued to surface but now as a factor related to leader influence on individual performance. A common theme appeared to be that the work force was very skilled and required little senior-level direction or intervention. In addition, the leaders displayed significant trust in the ability of those assigned to the replenishment program. Again, the leadership was portrayed as instrumental early in the missile program with respect to getting the program "off the ground", providing program resources and "setting the tone" for the organization. The senior leaders also provided motivational support and encouragement throughout the 1999 time frame. One participant revealed that the CMPG leaders were very accessible and another described an "open door policy" whereby individuals or groups had ease of access to the CMPG senior leaders.

The leadership of the CMPG Product Group Manager and the Boeing Program Manager made the Designated Acquisition Commander's job very easy because of the strength of the organization and the success of the program. The senior leader's success

was reflected and indeed realized by the achievements of the personnel in the “trenches”; those in the program office.

Overall Significance of Leadership Findings. Eleven of thirteen participants that were interviewed reported that overall leadership played a significant role in the successful execution of the 1999 accelerated Conventional Air Launched Cruise Missile Replenishment Program. The overall significance of leadership could be summarized as instrumental, particularly with respect to leadership style. The willingness of the senior leaders to grant freedom to the integrated product team through the principle of empowerment was noted by several participants. Generally speaking, the participants sensed a significant amount of freedom to manage the program as they had been trained to do. As a result, the team gained a degree of satisfaction from the responsibility that had been granted by the leaders and the trust that had been placed in them. One participant singled-out the program manager in executing the day-to-day activities as key to success; more significant than the senior leaders. Senior leaders were also instrumental in helping the integrated product team maintain focus on program goals and objectives. Focus was critical due to the short duration of the program. Program activities and events were tightly scheduled with little margin for error or re-planning.

The Designated Acquisition Commander noted the cooperation and spirit displayed by the Government team and the contractor team. The needs of the customer that were driven by recent military operations provided a great impetus to succeed. In summary, the program, in the absence of leadership from both sides of the team, would not have been successful.

Findings Related to Research Question Three:

Effectiveness of Management Principles

Effect/Significance of Program Planning Findings. Twelve of thirteen participants indicated that planning was a significant factor in the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. The accelerated missile program clearly would not have been successful without effective planning. Personnel would not know what to do from day-to-day without planning. Two participants stated that planning was likely the most critical management principle related to the execution of the 1999 replenishment program.

Planning was significant from the very beginning of the program. The program office focused very early on funding estimates needed to support the program and associated schedules. Program planning was essential but it was short-term rather than long-term due to the nature of the task – to convert existing missiles using existing technology. Effective planning helped avoid the inefficient allocation of limited resources. This management principle was also singled out for providing sequential steps necessary to execute the program and identification of tools for tracking progress versus the program plan. One participant defined the plan as a “roadmap,” and as such, provided a course for all to follow. The establishment of clear goals and objectives were developed during the program planning phase. Data related to other management principles frequently referred to program goals and objectives that were defined during early planning.

The foundation for the level of success achieved was “poured” during the planning phase. The CMPG leaders briefed the decision-makers very early in the program and were successful in convincing the Air Force senior leadership that all the proper elements were considered and the program plan was executable. Planning by the contractor that was responsible for the actual work on the weapon system was identified as very significant by two participants, however, it was not considered in this study.

Effect/Significance of Organizing Findings. Twelve of thirteen participants that were interviewed reported that organizing played a significant role in the successful execution of the 1999 accelerated Conventional Air Launched Cruise Missile Replenishment Program. The CMPG Organization supported multiple missile programs and established what was essentially a “tiger team” to quickly execute a very tailored and very exact acquisition. An integrated product team was formed to support the replenishment program and the organization was highly streamlined and extremely focused on the immediate task.

A common theme gleaned from the data was that the organizing principle was instrumental in building the framework (team structure) that enabled very effective communications. The integrated product team structure, a product of the organizing process, was also instrumental to the high level of success that was achieved. The senior leaders populated the team with functional expertise that had the optimal blend of training and experience needed to be fully successful. Included in their many roles and responsibilities were the functions of organizing, managing, and coordinating all aspects of the program. Organizing by the integrated product team was further enhanced with

respect to performance because the senior leaders empowered the program manager and the team to manage the replenishment program. The team was very successful in assessing progress against program goals and objectives; team organization helped avoid critical mistakes (supports the theory that group decisions are usually better than individual decisions). The free-flow of essential information, according to one participant, was made possible through sound organizational decisions that were made at the very beginning of the 1999 replenishment program.

The effective employment of the organizing principle was also important due to the involvement of multiple organizations in the program. The combined efforts of the CMPG, the Pentagon and Air Combat Command personnel, and the contractor had to be organized and effectively coordinated in order to move forward and maintain support for the project.

One participant championed the importance of the organizing process that yielded the integrated product team but added a shortcoming within the overall team structure. There seemed to be an excessive number of meetings and fragmented efforts that at times were non-productive and caused some delay.

Effect/Significance of Staffing Findings. Eleven of thirteen participants that were interviewed believed that staffing was a significant factor in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. One participant stated that staffing had an effect but did not indicate that it was *significant* effect on the outcome of the program and another indicated that staff was already in place at the beginning of the 1999 program. Another factor that also significantly affected the

success of the program was the previous experience of several team members in an almost identical missile replenishment program during the early 1990's. One participant did not clearly state the significance of program staffing related to program success, but nevertheless lauded the senior CMPG leadership for requesting an additional team member from the directorate of contracting to further augment the missile team.

The most frequently cited effect of staffing on the success of the program was attributable to a well-trained, experienced, and motivated integrated product team that was sufficient in size and had the proper mix of functional expertise. Other than the obvious benefits from the team structure – one that increased the probability for success, the team composition boosted the confidence of the leaders as well as the team that they could be successful. The experience factor was leveraged considerably by utilizing the seasoned team member's training and experience to further augment the team as the program progressed. The senior leaders were successful in hiring additional expertise - predominantly skilled, non-government personnel. The experience factor most assuredly helped accelerate planning and decision-making functions, according to one participant. The participant that indicated that staffing was not a significant factor believed that personnel were already in place but . . . “had to work harder and longer hours to get the job done.” However, the participant segregated program office staffing from augmentation of the team with civilian contractor support personnel. In the context of the research question, all personnel (military, government-civilian and contractor) involved in the daily planning and execution of the replenishment program were considered “staff.”

One participant revealed that staffing was significant from a company perspective but not for the CMPG Program Office. The company had to acquire new people to learn/adapt to a legacy program and to get them to produce a quality product in a short period of time. However, the Government program office did not have to augment the staff with additional people to carry out this task. The Program Office utilized the people and the resources that were available within the Program Office to manage and execute the program.

Effect/Significance of Directing Findings. Ten of thirteen participants that were interviewed reported that directing played a significant role in the successful execution of the 1999 accelerated Conventional Air Launched Cruise Missile Replenishment Program. The senior leaders were cited for playing a significant role in directing the replenishment program. Directing was a significant factor to a great extent because the program was very focused. The senior leaders within the company and the Government had a powerful impact in this leadership role. One participant believed that directing was probably, in retrospect, the area that made the greatest contribution to the program. Seven additional participants cited efficient and effective direction as strategic leadership factors that contributed to the success of the program. Successful employment of the directing principle helped create an environment for productive work; a more relaxed environment than in the past. One participant offered that the Product Group Manager was key with respect to his influence and motivational skills in directing the program within the CMPG. The senior leaders consistently pushed the team to work hard and maintain focus, believing themselves that the project could be accomplished within the

time lines that had been established. However, directing by the senior leaders appeared to be balanced against the principle of empowerment. The leaders employed the directing principle only as necessary, permitting the team as much freedom as possible in the day-to-day management of the program. Encouragement was offered to the integrated product team during time periods when program issues and/or delays were encountered.

The senior leader was also vital in presenting the program to senior Air Force officials; missile program presentations (briefings) were necessary to gain authorization to begin the project. The directing management principle was important at the CMPG senior management level as issues arose that on occasion halted progress and required expedited resolution. The directing principle was very important in ensuring that program events occurred in the proper sequence and within the overall schedule parameters that had been established. The accelerated program required every day direction, motivation and communication by all participants.

The senior leaders also played an important role in directing support activities outside of the CMPG; external support required to successfully execute the missile replenishment program. Time constraints related to achievement of program goals and objectives allowed little margin for error. Proper direction was also important in order to ensure that program funds were properly allocated and controlled in accordance with statutory provisions and program plans.

Some negative aspects related to the directing principle were also cited in the data. The morale of the workforce suffered at times and perhaps the senior leaders could have been more "in tune" to that situation. The fast pace of the program likely drove most

leadership attention and focus toward programmatic issues. Finally, although the senior leaders were successful in motivating the team and creating a more informal and relaxed work environment, the approach led to some frustration at times. The senior leaders may have more efficiently and/or effectively resolved numerous programmatic issues with a more directive approach.

Effect/Significance of Controlling Findings. Nine of thirteen participants that were interviewed reported that controlling was a significant factor in the success of the missile replenishment program. The controlling function was noted as an important management tool for measuring progress with respect to scheduled events and program milestones. In the accelerated missile program, the key metrics were the quality and the timeliness of the product. The cost metric was not as significant (unusual in today's fiscally-constrained environment) due to the urgent need for additional weapon systems.

The CMPG leaders employed various tools to measure progress against program goals and objectives; adjustments and/or additional guidance were provided to the team when appropriate. The measurements (control) were consistent throughout all phases of the program. Fortunately, according to one participant, the tools used by the CMPG were standard practice when the accelerated program was initiated. Information provided by the controlling function (cost, schedule, technical, etc.) enhanced the flow of communication among team members and between the team and the senior leaders. Some of the tools, such as briefings and reports, were beneficial for periodically establishing a common level of information and understanding to personnel internal and external to the missile program.

Four participants cited the importance of the control process in meeting the stringent time lines established for the program. Information was continuously made available to management to allow program measurement and evaluation and to highlight areas where corrective action was needed. Problems were swiftly resolved which allowed the program to proceed with only minor delays – essential to achieving program goals and objectives on an accelerated time line. The controlling function was also cited for maintaining team focus on program goals and objectives (reported by two of thirteen participants).

One participant stated that the planning and organizing functions “. . . paved the way for success on the program...the controlling principle played a role but it was not large.” The control function was not particularly visible at the management level to one participant and several reasons were offered:

- Little control was needed (individual and team motivation was high)
- The responsibility was delegated by senior management to the team
- The control tools were used at the integrated product team level

Findings Related to Research Question Four:

Management Influence

Planning Influence Findings. Program planning had significant influence on individual and team performance. All participants interviewed shared positive influences that resulted from effective program planning. Some similar themes from other research questions surfaced. The term “roadmap” was used to describe a clear path for the missile

team to follow. The plan was also described as “the common denominator” noting that it was important to adhere to the plan. However, the team acknowledged that circumstances could and actually did require planning adjustments; but the plan was the plumb line for all to follow. Planning was singled-out as the principle that helped the integrated product team maintain focus on achieving program goals and objectives. Tiered planning that essentially flowed from top level planning facilitated more detailed planning at the integrated product team level. Additionally, program planning helped the team establish priorities and communicated clearly what was required in order to be successful.

One participant reflected on the limited amount of time that was available for planning the replenishment program and dubbed it “just in time” planning; actually out of necessity. Timing, relative to the schedule, was yet another compelling factor that required program planning be done quickly and effectively. One participant revealed that the initial software plan was not executable. However, the planning process helped focus attention on resolving missile program software interface problems.

The success of the Designated Acquisition Commander was dependent upon the success of the program office. The program office could not have been successful without planning, so it was paramount to the senior officer.

Organizing Influence Findings. Flexibility for mid-level managers to serve more effectively in dual roles was greatly enhanced by the integrated product team organizational structure. More specifically, mid-level supervisors and functional leaders were able to devote time for staff/supervisory duties while the integrated product team

managed the day-to-day program activities. In many ways the supervisors and/or functional managers simply functioned as resource providers.

Team structure also facilitated the efficient and effective execution of work tasks that ultimately led to achievement of program goals and objectives. The effective organization of personnel that were involved in the replenishment program translated into clear roles and responsibilities. It helped make everyone's job easier and likely raised the probability of success in terms of achieving program goals and objectives. The missile team structure and support staff enhanced vertical and horizontal communications within the CMPG and other organizations. One participant emphasized that the need to communicate effectively could not be over-stressed.

The organizational structure (integrated product team) helped focus work effort that enhanced working relationships between and among contractor and government personnel. The team structure helped eliminate inefficiency that often accompanies fast paced, complex projects similar in scope to the cruise missile replenishment program. More specifically, organization helped reduce the probability of error; negative consequences including cost overruns, schedule delays, and other inefficiencies that typically result in program delays. The interdisciplinary approach adopted by the CMPG senior leaders was a significant influence in the success of the 1999 missile replenishment program.

The responsibilities of the Designated Acquisition Commander were directly related to the success of the program office. Therefore the successful organization by the

program office enabled the Designated Acquisition Commander to be successful in carrying out oversight responsibilities for the missile program.

Staffing Influence Findings. During the very early phase of the program, the CMPG leaders were forced to “shuffle” some personnel within the missile organization. While that management decision proved beneficial to the missile replenishment program, as one participant revealed, it came at the expense of other missile programs within the CMPG organization. However, the reallocation was based on program priority within the entire organization. One participant felt that the missile replenishment program could not have been executed within the accelerated timeframe without the additional staffing from within the CMPG organization.

The ability to succeed was aided by a knowledgeable and experienced cadre of personnel that was available from the very beginning of the replenishment program. This factor was cited by five of thirteen interviewees. Several benefits resulted:

- The team very capably handled routine tasks and quickly addressed issues that otherwise could have lead to significant program delays.
- A mature, established team enhanced the flow of vital information for the team and upper level management; improved productivity of the entire staff.
- Knowledgeable personnel (core team) that were in place at the time direction to proceed with the replenishment program was received got the program off to a rapid start.

One participant offered that the value of staffing decisions by the senior leaders was evident to an extent by the superior results that were achieved by the missile replenishment team. Obviously, many other factors played into the success of the program. One participant commented that the multi-disciplined team not only possessed skill and experience, but also the “right attitudes” to be very successful – in a sense, the team dynamic (composition/characteristics) was greater than the sum of the parts. The staffing of the project impacted all levels of the organization including the Designated Acquisition Commander since the responsibilities of the Designated Acquisition Commander are dependent upon the success of the program office.

Directing Influence Findings. The data revealed that directing was not as significant in the overall success of the replenishment program as other management principles. Four of thirteen participants revealed that directing was not significant (or not *very* significant) in the success of the program. Directing at the senior management level was cited for providing focus and emphasis on the program (three of thirteen participants), and clear communication of goals and objectives (two of thirteen participants).

Directing was important as an integral part of day-to-day management below the senior leader level. The integrated product team was self-motivated and empowered by the senior leaders, which may explain the reduced significance of senior leader direction. One participant emphasized that the replenishment team shared a great deal of camaraderie with one another and adopted a “lets move forward and go get it” attitude. Interestingly, another participant cited a lack of direction (“at times”) during the program

but noted that the organization grew and, in effect, filled the gap. The same participant followed that, on a positive note, the team was empowered by the senior leaders to accomplish the mission.

In summary, the senior leader role was important with respect to initial direction (communication of goals and objectives), and in helping to maintain focus for the duration of the program. Although not directly stated, some of the data framed the senior leaders as coaches; the leaders served frequent reminders to everyone on the team that they had a unique opportunity to participate in accomplishing something really special and important to the country's national defense. However, empowerment by the senior leaders in conjunction with an experienced and self-motivated work force reduced the directing role of the CMPG senior leadership. Directing was important in the day-to-day execution of the program; but not significant on a consistent basis to all participants and to some, not significant at all. The overall effect of direction on the role of the Designated Acquisition Commander was not known other than behavior was channeled to accomplish the mission and the Designated Acquisition Commander could not have been successful had the program failed.

Controlling Influence Findings. The predominant contribution of the controlling principle's influence on the success of the missile replenishment program was the measurement of progress against program objectives and follow-on corrective actions. Again, however, the importance of focus on established goals and objectives was repeated and the tools used by the integrated product team and management throughout the program helped maintain team focus, ensuring the program remained on track. The

continuous focus of the senior leaders on executing the missile plan served as a constant reminder to the integrated product team that their very best effort was required and expected on a daily basis. Their performance as a team was also constantly reviewed and scrutinized not only by the CMPG but also by many outside organizations and very senior government officials. The “hour glass” visibility also served as a motivational factor to the integrated product team. They were well aware that their individual and collective roles and responsibilities were critical to the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program and that the program was very important to national defense.

One participant (apparently a supervisor) conveyed the importance of the control function as an aid in employee development and evaluation. Numerous tools were used to track program progress but were also useful as a means of measuring individual and team performance. Measurement of individual performance against standards was described as a “necessary evil” but nevertheless key to objectively evaluating performance. Employee evaluations provided valuable feedback to team members by conveying the supervisor’s level of satisfaction (or dissatisfaction) with job performance.

The controlling principle was specifically noted for its effect on schedule control. Performance relative to scheduled activities and events provided senior leader and team-level visibility regarding progress versus goals and objectives. Continuous program schedule visibility facilitated rapid identification of potential or actual program delays and provided the basis upon which to direct corrective actions to help get the program back on track. The impact of controlling was significant to schedule control; the primary

determinant for success on the program. The Designated Acquisition Commander was dependent upon the successful execution of the accelerated program and his success was ultimately dependent on meeting program time lines.

Findings Related to Research Question Five:

Urgent Need or Other Factors

Urgent Need Findings. The most frequently cited key factor associated with the accelerated missile replenishment program was the urgency of need to replenish the Conventional Air Launched Cruise Missile inventory. Twelve of thirteen participants reported that urgent need for additional missiles was a significant factor in the success of the 1999 program. The U.S. Air Force had recently expended a large percentage of the available cruise missile inventory during military operations in 1999 and no near term planning for future production or replenishment capability had been considered. The urgency to accelerate the program increased significantly during early 1999 when the inventory level dropped below 100 missiles. The urgent need, emphasized by the Chief of Staff of the Air Force, was the major factor that created focus on the program.

The CMPG was instructed to accelerate the program after it had been initiated in early 1999 to the maximum extent possible in order to replenish the conventional cruise missile inventory. The standoff capability offered by the conventional long range cruise missiles precluded having to put aircraft and personnel at greater risk over heavily defended enemy territory. The weapons were very effective and highly desirable during the initial days of military operations. Clearly, the CMPG team was under a spotlight to

perform. The organization of the team, application of their skills, and motivation to excel were vital to success and the team was responsive to the urgent need for additional missiles.

The management principles embraced by the CMPG (planning, organizing, directing, etc.) were in place and did not change to accommodate the accelerated missile replenishment program. However, it was very important that the principles were well established and key personnel were on the team or readily available for reassignment within the CMPG organization at the beginning of the project.

Other urgent need factors that contributed to the success of the missile replenishment program in 1999:

- Funding was provided quickly which enabled the work to begin
- Outstanding cooperation by outside supporting agencies/organizations
- Very high interest and program visibility within the U.S. Air Force
- Superb effort of many people working toward common goals and objectives

Other Factor Findings. The participants noted numerous additional factors contributing to the success of the 1999 missile replenishment. Factors presented previously in the research were not be repeated unless the data offered an additional perspective.

The personnel involved in the program were very concerned, very interested, talented and extremely motivated. The team possessed very desirable characteristics to achieve a high level of performance. Team dynamics of the integrated product team were

unique; personnel were concerned organizationally for the success of the program and also for providing the war fighters additional cruise missiles as quickly as possible.

Dedication to duty, pride, and a strong sense of patriotism contributed immensely to the success of the program. The personnel involved in the program recognized the magnitude of the problem and clearly felt a strong sense of pride and patriotism in rising to the challenge. Some of the most senior leaders in the U.S. Air Force challenged the CMPG integrated product team to give their very best effort in striving to satisfy the critical shortage of weapons.

The 1999 missile replenishment program was the product of the combined efforts of the CMPG and contractor organizations. The close working relationship between Government and contractor personnel was essential to the rapid development of the replenishment plan and its successful execution. Mutual supporting relationships had been previously developed – the two organizations spoke with “one voice” to the senior decision-makers in industry and in the Government; another key factor in the success of the program.

Strong political support played an important role in the fast program start. Support by organizations outside the CMPG (primarily in Washington D.C.) was critical for securing program funding; approval and authorization by Congress was a mandatory first step in getting the program underway.

There were a number of other factors that contributed to the success of the 1999 replenishment program. They are briefly summarized below:

- The Boeing Company was a factor in that the company wanted to remain pre-eminent in the cruise missile business.
- A nearly identical program was executed previously during 1992-1994.
- The same contractor that designed and produced the missile was awarded the contract to do the replenishment (conversion from nuclear to conventional capability).
- The contractor retained personnel in 1999 that were involved in the 1992-1994-conversion program. The contractor had an experienced team.
- The contractor placed significant emphasis on the program. Factors included company loyalty, pride in workmanship, and a sense of national urgency.
- Some of the same personnel that had executed the 1992-1994 program were still within the CMPG organization and available to support the 1999 replenishment program.
- Some of the associated tasks that were needed to accomplish the replenishment program in 1999 were actually not a part of the program. They were ongoing studies or modifications to the missile that were in process since 1994. The replenishment program would have taken additional schedule time and funding had those efforts not been underway.

- The replenishment program in 1999 was almost identical to the 1992-1994 program however, the production facility including tooling and equipment had to be relocated from Tennessee to Missouri.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

Statement of the Problem

The successful execution of the Conventional Air Launched Cruise Missile Replenishment Program during 1999 was a noteworthy accomplishment in Air Force program management. Leadership, management and other factors may have contributed to the completion of the project by the Conventional Air Launched Cruise Missile Team in an extraordinarily short, seven-month timeframe. Therefore, what leadership, management, and other factors contributed to the rapid execution of the Conventional Air Launched Cruise Missile Replenishment Program?

Purpose of the Study

The purpose of the study was to examine leadership, management and other factors during calendar year 1999 that contributed to the rapid accomplishment of program objectives and success of the Conventional Air Launched Cruise Missile Replenishment Program in only seven months. Insights gained from the study may provide a useful leadership and management resource for others in government and

industry and serve as a basis for further research in the field of leadership and management.

Methodology

A case study using qualitative methods was selected because the 1999 Missile Replenishment Program represented a “case history” of particular interest. The study was designed to collect qualitative data from a purposive sample of the population (13 participants) regarding the impact of leadership, management principles, and other factors on the accelerated Conventional Air Launched Cruise Missile Replenishment Program. The total population consisted of 40 individuals. Specific interview questions were structured to collect data that would support the five broad research questions listed below. The questions focused on leadership, management principles (planning, organizing, staffing, directing, and controlling), urgent need and other factors. The questions were designed to collect qualitative data about the significance and the effects of leadership, management principles, urgent need and other factors on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program. The research data was compared to the literature with the objective of gaining insights and assessing the influence of leadership, management and other factors on the rapid completion of program objectives. Other topics related to the research problem that surfaced during the interview process were also included in the study.

Research Questions

Specific interview questions were structured to collect data that would support the five broad research questions that were listed in Chapter I:

1. What were the leadership characteristics of the Cruise Missile Product Group?
2. How did the Cruise Missile Product Group leadership influence execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program?
3. How effectively were management principles, including planning, organizing, staffing, directing and controlling employed by the Cruise Missile Product Group?
4. How did management principles influence execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. What urgent need or other factors could have contributed to program success?

Summary

The findings from this case study provided insights into the impact of leadership, management principles, urgent need, and other factors in the success of the accelerated Conventional Air Launched Cruise Missile Replenishment Program. Some of the most significant insights that may have contributed to the rapid execution of the Conventional Air Launched Cruise Missile Program included the important role of the senior leaders

early in the program, the decision by the CMPG senior leadership to empower the integrated product team, team training and experience factors, planning and organizing, and a sense of duty and patriotism in response to the urgent need for weapons.

Conclusions

The findings from this qualitative study of leadership, management, and other factors that may have contributed to the rapid execution of the Conventional Air Launched Cruise Missile Program resulted in the following conclusions that are related to each of the broad research questions outlined in Chapter I.

Conclusions Regarding Research Question One:

CMPG Leadership Characteristics

Research question number one was designed to identify leadership characteristics of the Cruise Missile Product Group. The research attempted to identify the significance of the CMPG leadership role and senior leadership style and characteristics that may have contributed to the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program.

Ninety-two percent of those interviewed believed that the CMPG leadership played a significant role in the success of the 1999 missile replenishment program. One subject stressed the importance of the Boeing Company's leadership in concert with the leadership within the Government program office and it was indeed a valid observation. However, the industry side of leadership on the program was not included in order to

limit the scope of the study. A review of the data revealed that the senior leadership made the most significant contributions during the events preceding the start of the program. The senior leaders were noted for a series of high-level program presentations that were key to gaining Air Force approval to fund the project. The presentations outlined the technical, schedule and cost elements of the proposed replenishment program. The ability to speak knowledgeably and confidently to decision-makers was identified as a significant senior leader characteristic.

The senior leaders “set the tone” for the integrated product team. The most common CMPG leader characteristic cited in the study was empowerment of the integrated product team to manage and execute the missile replenishment program. The findings revealed that empowerment was significant to the level of success that was achieved. Champy (1995) emphasized that leadership must enable the workforce; that is, allow people to exercise their skills and capabilities to the fullest extent possible – then step back and let it happen. Clearly, the leadership approach exercised by the CMPG senior leaders was consistent with a growing body of literature that encourages the empowerment of people.

The integrated product team was very experienced and well trained for the new program and the senior leaders immediately recognized this organizational strength. The team was given responsibility and authority for day-to-day management of the program. As a result, the workforce gained confidence and an increasing level of job satisfaction. The senior leaders’ role as “coach” in providing motivation and encouragement was prominent throughout the duration of the program. The leadership decision to empower

the integrated product team provided the freedom to execute the program with little interference from upper management. Thus, the CMPG leadership gave the team maximum freedom to discharge daily responsibilities and every opportunity to be successful.

The leadership style, also described as non-intrusive, was very effective. The CMPG leadership focused more on people than on work assignments; on developing relationships rather than on planning details; on values and principles rather than on activities; on mission, purpose, and direction rather than on processes and procedures. Leadership had a dual role in the replenishment program; to direct and coach when necessary and to help build consensus of thought regarding the direction of the program.

Conclusions Regarding Research Question Two:

Leadership Influence

Research question number two was designed to identify how the Cruise Missile Product Group leadership influenced assignments during the execution of the accelerated Conventional Air Launched Cruise Missile Replenishment Program and the overall significance of leadership on the program.

Eighty-five percent of those interviewed believed that overall CMPG leadership significantly influenced the execution of the 1999 accelerated missile replenishment program. In fact, the Designated Acquisition Commander stated that he would not have been successful had the CMPG leadership (and the team) failed.

The data, not surprisingly, carried a common thread with research question number one – empowerment of the work force. The most significant effect on the ability of the integrated product team to execute assignments was a high level of senior leader confidence in the ability of the integrated product team to manage the replenishment program. The leaders allowed the team to manage the program at the execution level; responsibilities that included identification and resolution of program issues. The team required little senior level direction or intervention once the program was underway.

Support for the integrated product team, accountability for results, and effective communications were listed as key to establishing trust in the CMPG organization – the integrated product team was trusted and indeed took responsibility and managed the missile program extremely well. The team also elevated programmatic issues to the senior management level on an as needed basis for assistance. The CMPG leaders were very accessible and consistently maintained an “open door policy.”

The overall significance of leadership within the CMPG was noteworthy and played a significant role in the success of the accelerated Conventional Air Launched Cruise Missile Replenishment Program particularly during the very early phase. The research data indicated that the integrated product team enjoyed a significant degree of freedom to manage the program and gained a high level of satisfaction from the confidence and trust placed in their abilities by the CMPG senior leaders. In addition, the senior leaders were key to helping motivate the team and maintaining focus on achievement of goals and objectives.

The CMPG leaders presented a strategic plan to the integrated product team that included clear goals and objectives for the accelerated missile program and the significance of the project to the U.S. Air Force. The program goals and objectives set forth by the CMPG senior leaders fully endorsed the customer's requirement for additional weapons in the shortest amount of time. The CMPG customer was Headquarters, Air Combat Command located at Langley Air Force Base, Hampton, Virginia. A sharper focus on the needs of the customer was the vision offered by Keen (2000) as related to future organizational structures - a shift from an institutional focus to a customer focus. The urgent need for additional weapons and short duration of the planning phase helped sharpen the CMPG organizational focus on the needs of the customer. In summary, the level of support and cooperation and ultimately the success of the program were greatly influenced by the CMPG focus on the customer's urgent need for additional weapons. The benefits were realized in the level of program synergy and team building between the CMPG organization and the customer.

Conclusions Regarding Research Question Three:

Effectiveness of Management Principles

Research question number three was designed to identify how effectively the management principles - planning, organizing, staffing, directing and controlling were employed by the Cruise Missile Product Group.

Planning Effectiveness. The research data revealed that the planning principle was a very significant factor in the successful execution of the 1999 Conventional Air

Launched Cruise Missile Replenishment Program. Ninety-two percent of those interviewed believed that program planning played a significant role in the success of the 1999 missile replenishment program. Planning was the activity that provided the foundation upon which the missile replenishment program was built, therefore it was preeminent with respect to the principles of management. Planning was the most critical management principle with respect to successful program execution. Program planning was significant because it affected many aspects of the program throughout the duration of the effort. During the early phase of the program, the planning “roadmap” identified resources such as staffing that would be required to effectively manage the program. The accelerated project simply would have had no chance for success without an effective plan. From the very beginning, planning was paramount to the success of the program.

Planning the program, which included funding requirements, was essential to gaining approval from senior Air Force officials. Establishment of clear goals and objectives was a product of program planning. Program goals and objectives were important to help convince senior Air Force leaders that the replenishment program was not only well planned but also achievable. Goals and objectives were also vital for the integrated product team; they provided the benchmarks for development of lower level activities and events. The team was empowered by the senior leaders to plan and execute the missile program and the integrated product team fully embraced the challenge. Planning helped the team maintain focus throughout the duration of the program.

Organizing Effectiveness. The research indicated that the organizing principle was a very significant factor in the successful execution of the 1999 Conventional Air

Launched Cruise Missile Replenishment Program. Ninety-two percent of those interviewed believed that organizing played a significant role in the success of the 1999 missile replenishment program. The organizing principle was very effective and had great significance in helping establish the operational framework for the program. Organizing skills were important at all levels within the program but especially at the senior CMPG leader and program manager levels. Strong organizational skills were key to shaping the team structure - a program strength throughout the 1999 time period.

The senior leaders empowered the program manager to organize the integrated product team personnel and work assignments. The program manager had many years of experience and very strong organizing skills. The senior leaders leveraged the program manager's abilities by delegating the authority and responsibility to fully organize the team personnel and the program planning for all activities and events. The CMPG approach to organizing the replenishment team yielded the benefits/results highlighted by Hellinghausen and Douglas (1999) - cross-functional, empowered teams promote "out of the box" thinking which can lead to more effective solutions. The authors cautioned that fully implementing the team building process takes time and effort, however, the cross-functional missile replenishment team was essentially in-place from the beginning of the accelerated project. The results achieved from the empowered team concept and documented in the study support the position that dramatic results occur with committed and creative teamwork. The integrated product team became more confident and motivated through the teaming process.

The program manager organized the team very quickly and led the planning process that was ultimately critical to the level of success achieved on the program. Sound organizational decisions early in the program facilitated the open and free-flow of horizontal and vertical information throughout all organizations which were directly or indirectly supporting the replenishment program. Consistent and continuous information flow was yet another program strength that aided the team in making fully informed decisions based on all relevant facts. This team strength helped avoid errant decisions and most probably resulted in more effective overall decision making. The integrated product team structure allowed all individuals that had a position on the team to have access to information relative to the issues being addressed and a degree of delegated authority to commit the team. Full membership participation was important for building team synergy and focus on program goals and objectives.

Organization of the integrated product team personnel and their activities were also very important because multiple organizations participated in the execution of the missile replenishment program. Certo (2000) said that the organizing function creates and maintains relationships between all organizational resources by allocating them for specific activities. In that regard, numerous outside agencies played important roles in the program and added a complexity factor to the overall effort. Efficient and effective organizing of activities and events ensured near optimum use of limited program office resources. The missile replenishment program was well organized from the very beginning – a fact that greatly facilitated coordination of activities and events with all external organizations that were supporting the accelerated project. As a side note, the

requirement for organizing was much more challenging for the Boeing Company than for the Government program office because the Boeing program office was not in existence at the time the program was initiated.

Staffing Effectiveness. Program staffing was a significant factor in the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. Eighty-five percent of those interviewed believed that program staffing played a significant role in the success of the 1999 missile replenishment program. The missile program integrated product team had been well trained and the experience factor was also very valuable and key to the success of the program. Most of the team membership was in place when the replenishment program was initiated in early 1999. Several team members assigned to the 1999 project had previous experience on an almost identical replenishment program in 1992. The CMPG senior leadership subsequently augmented the team with additional expertise. The matrix management structure that existed within the CMPG and other functional organizations at Tinker Air Force Base provided the inherent capability to rapidly expand or reduce the size and/or composition of the integrated product team. The Designated Acquisition Commander noted that the Boeing Company had a significantly greater challenge in this area; the company had to staff an entire organization whereas the CMPG required augmentation.

The integrated product team was challenged by the senior leaders to manage and execute the replenishment program in a manner that would produce additional missiles as quickly as possible (urgent need driven). The team responded with great enthusiasm and was very motivated and determined to meet goals and objectives that were established for

the program. These factors helped get the program off to a rapid start and continued as major factors that contributed the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program.

Directing Effectiveness. The research revealed that the directing principle was significant in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. However, only seventy-seven percent of those interviewed believed that directing played a significant role in the success of the 1999 missile replenishment program. The CMPG leaders employed the directing principle only when necessary - efficiently and effectively. Direction from the senior leaders was largely related to major goals and objectives for the program and when requested by the program manager. The most significant senior leader contributions were made early in the program when strategic level planning was developed. The senior leaders provided clear direction when the top level planning was completed.

The senior leaders helped create a work environment that was conducive to self-motivation. The leaders encouraged, praised, and in many ways functioned as coaches for the missile team. The integrated product team was empowered to plan and execute the program and enjoyed an extensive degree of freedom. As a result of the aforementioned factors, the team "took ownership" of the replenishment program and exhibited a sense of pride and accomplishment as the program proceeded. A significant amount of synergy was created within the team and it had a significant positive influence on their performance. The members seemed to "feed-off" of individual and team accomplishments throughout the various program phases.

Effective direction outside of the integrated product team environment was also important to the program. Formal presentations to senior Air Force and Department of Defense officials were key to gaining approval for the replenishment program. In addition, direction from the CMPG leadership to other outside organizations, primarily at Tinker Air Force Base and the Pentagon was vital for gaining support and funding for the program. The program was planned from start to finish with very accelerated schedules that demanded near precision execution. The direction provided by those in positions of authority was very effective and thus aided progress toward meeting program goals and objectives.

A lack of direction at times by the senior leadership was cited as an area of frustration for some involved in the program. However, the benefits offered by the management approach that was employed (with respect to directing) and results achieved on the accelerated program far outweighed the negative affects of any voids in senior leader direction.

Controlling Effectiveness. The controlling principle was not *as significant* as other management principles to the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. Only sixty-nine percent of those interviewed believed that controlling played a significant role in the success of the program. However, it was likely more significant at the integrated product team level. Several research observations led to this conclusion:

- Only nine of thirteen subjects believed that controlling was significant in the overall success of the program.

- The team was very motivated to succeed and enjoyed much success therefore the value of control tools (program metrics, reports, status briefings, etc.) to monitor progress and take corrective action was diminished to an extent.
- The senior leaders utilized numerous control tools but their value was largely in maintaining awareness of progress toward meeting program milestones.
- The team was very well trained and experienced, therefore the senior leaders placed great confidence in their collective ability to plan and execute the program (consistent with the strategy to empower the team) including the functions of monitoring/measuring progress and taking appropriate corrective actions when required. The CMPG senior leaders were not divorced from control measures; they maintained constant awareness of progress and issues, however, the need for the control function was not as significant as perhaps within other programs of similar scope and importance. To a great extent, the senior leaders were able to take a “hands-off” approach to managing/monitoring the replenishment program; in retrospect, the management strategy proved to be very effective.

The control tools were in-place from the beginning of the program and used on similar missile programs within the CMPG organization. In that regard, nothing new had to be created for the replenishment program – only adapted for use. The tools provided visibility related to cost, schedule, and performance and were of significant value to the

integrated product team in measuring progress and highlighting areas wherein corrective measures were required. The key-program metrics were schedule (driven by the urgent need for weapons) and quality (driven by a requirement for high system reliability).

Rohlander (1999) advised that communications must be honest and open to ensure free-flow of information in the organization – definitely a “strong suit” in the day-to-day execution of the accelerated missile program. The team also used their products very effectively (control tools) to inform senior leaders of progress toward goals and objectives and to request assistance when needed.

Conclusions Regarding Research Question Four:

Management Principles Influence

Research question number four was designed to identify how management principles influenced execution of the Conventional Air Launched Cruise Missile Replenishment Program.

Planning Influence. The planning management principle was very significant in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. More specifically, planning influence on the missile program was significant and obvious to many. The outstanding results achieved during 1999 would not have been possible without effective planning by the CMPG senior leaders and mid-level managers. In addition, the Designated Acquisition Commander was dependent upon the success of planning by the program office. The functional team members also played an important role in planning the program. The team members were very well

trained and experienced and as a result were able to provide significant inputs into the planning process.

The program plan was the roadmap that brought to light all the resources, schedules, activities, and events that were required to be fully successful. The plan was the foundation upon which all other program activities were based. The research data was consistent with the literature regarding the primacy of planning –it preceded the final functional structure of the integrated product team, staffing decisions, and the development of program controls.

Planning was a very positive influence and helped the team to be successful in several other ways. A high level of participation was rewarding for the program manager and functional team members, and very beneficial in terms of building an aggressive yet executable program plan. Early multi-tiered planning (multiple levels with the CMPG organization) quickly focused team priorities that, in-turn, helped get the program off to a fast start; the aggressive schedule demanded such an approach. Yet the plans had to be coordinated and mutually supportive with respect to program goals and objectives. Simply stated, the missile program plan was the roadmap for all participants to follow. It was changed when circumstances demanded adjustments, but it was nevertheless a clear path for all to follow and a valuable tool for gauging progress.

Organizing Influence. The influence of the organizing management principle on the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program centered on the structure of the integrated product team. The team structure helped facilitate open communications and encouraged participation by everyone on the

program. The program manager and the senior leaders encouraged the open exchange of ideas and suggestions by all participants. The organization of the integrated product team was critical to the efficient and effective execution of the program. Functional team members worked very well together and clearly understood individual roles and responsibilities. The missile team structure simplified assignments and also enhanced communications vertically and horizontally throughout the CPMG organization. Wells defined the organizing function as “. . . the process of logically grouping activities, delineating authority and responsibility, and establishing working relationships that enable the employees, and thus the entire unit, to work with maximum efficiency and effectiveness.” The successful organizing efforts of the CPMG senior leaders and managers helped focus the efforts of the multifunctional team and supporting organizations and greatly enhanced efficiency and effectiveness. The missile team capitalized on key advantages highlighted by Bishop (1999) regarding cross-functional teams. Decision-making was decentralized through the use of lateral decision processes, which can cut across the traditional vertical lines of functional authority, speeding the decision making process and increasing the chance of “buy-in” and cooperation from all affected organizations. Clearly, decision-making methodology was a prominent factor in the extremely rapid pace at which decisions were made on the accelerated program. Clear objectives were consistently communicated to and within the team. The assumption that higher quality decisions occurring through this cross-functional team decision making process was a reasonable one. Working relationships between and among government and contractor personnel were also very effective – essential to the

level of success achieved. The organizing process helped shape the team – a team structure that with solid staffing of trained and experienced personnel minimized mistakes and other inefficiencies that often plague complex and fast-paced projects such as the one examined here. Simply stated, successful organization helped reduce the probability of error; decisions or actions that often result in cost overruns, schedule delays or otherwise inefficient utilization of limited resources having negative consequences on the program.

In summary, the organizing influence on the success of the missile replenishment program paid huge dividends with respect to a highly effective team structure with an interdisciplinary approach to program management. Successful program organization also supported the Designated Acquisition Commander in executing oversight responsibilities for the program. The importance of the organization and structure of the integrated product team to the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program could not be overstated.

Staffing Influence. Staffing the missile replenishment program with experienced, well-qualified personnel was essential to meeting program goals and objectives established by the Air Force senior leaders including the Designated Acquisition Commander. Exceptional expertise from every functional area was clearly an important ingredient to the highly successful program. Fortunately, for those with the responsibility for staffing the program, the core elements for the accelerated project were already in-place at program initiation. The program manager and several functional team members that were assigned to related Conventional Air Launched Cruise Missile activities

primarily in the logistic, missile modification, and engineering areas were available to take-on the additional workload. This fortunate situation provided a tremendous boost in getting the program started quickly and efficiently (once program funding was secured). The program rapidly got underway without the management challenges of securing manpower and/or training new personnel – a sometimes very lengthy process. Again, the personnel that were available had a significant amount of experience on related or past similar missile projects. The senior leaders augmented the integrated product team as the workload grew. Team chemistry was outstanding even with high visibility from Air Force leaders (an “under the microscope” environment) and demanding expectations for success. The senior leaders were very selective in their staffing decisions. A combination of government and civilian support contractor personnel was needed to fully staff the integrated product team. The personnel that augmented the team added depth of experience to an already highly motivated group; they appeared to thrive on the momentous challenge before them.

The numerous strengths of the program manager and the team allowed the senior leaders to empower the integrated product team with little interference or top-down direction. It simply wasn't necessary. The team “took ownership” of the program and seemed to adopt a “we cannot fail” mentality. Some of that attitude was likely driven by the urgent need for additional missiles.

Directing Influence. The directing management principle, when compared to other management principles cited in the study, was not as significant to the overall success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program.

The directing influence at the CMPG senior leader level was unlike projects with similar scope and complexity. The senior CMPG leaders were very much engaged with the team during the early planning phase of the replenishment program, providing goals and objectives and direction for the accelerated project. However, the CMPG leaders soon delegated authority and responsibility to the program manager and in doing so took a “hands-off” approach in the day-to-day management of the missile replenishment program (empowerment at the organizational level where the work was accomplished). The result was a management strategy that focused less on directing and more on coaching and encouraging the team. A very experienced and well-trained team that displayed excellent team chemistry enabled the senior leaders to adopt such a management approach.

The directing influence within the replenishment program was significant at the integrated product team level. Day-to-day direction from the program manager to the functional team members was vital to the success of the program. But even at the “working level,” the experience and self-motivational characteristics of the team reduced the directing role/responsibilities of the program manager. Mariotti (1997) offered that today’s business environment is complex and filled with difficulty. However, highly motivated people working together with energy and enthusiasm can solve many complex and challenging problems. There was no doubt that the integrated product team shared a high level of camaraderie and quickly developed a “let’s get it done” attitude. From a management point of view, the team composition and team chemistry was a terrific match for the challenges presented by the complex, fast-paced, high visibility project. In

summary, directing was extremely important to the senior leaders, including the Designated Acquisition Commander, but the team simply required less direction from all levels of management and supervision simply because the team was very experienced, well trained, competent, and extremely motivated to succeed. In retrospect, it was unlikely that neither the senior leaders nor the integrated product team knew just how successful their efforts would be.

Controlling Influence. The controlling principle influence on the success of the replenishment program was noteworthy as related to the measurement of progress versus program goals and objectives and the opportunity to take corrective action if/when necessary. The tools used by the staff to measure progress were valuable to the integrated product team and to upper management. Only selected measures/metrics were provided to the senior leaders – measures related to, for example, cost, schedule, and technical performance. The integrated product team employed numerous lower tiered measures/metrics. They were used to support decisions at the team level or to provide, on occasion, information to the senior leaders to aid in decision-making. Some reports were also used to routinely update senior leaders within the CMPG and many other personnel external to the program office.

Much of the information presented only validated that the progress was consistent with the program plan. Some problems were highlighted by control measures and required an alternate course of action, but they were the exception. The 1999 missile replenishment program was a great success for numerous reasons presented in this study and as such, the value of the control principle was likely not as great an influence on the

success of the 1999 accelerated program as perhaps other similar projects. The program would likely have been successful without many of the control tools that were available and used in the program.

The information provided by the control measures was helpful in the sense that it provided visible evidence periodically to the team and to upper management including the Designated Acquisition Commander that excellent progress had been achieved throughout the duration of the project. The senior leaders leveraged the “visibility” provided by the metrics to recognize outstanding team and/or individual performances and to encourage and help motivate all personnel that played a role in the accelerated program. Rohlander recommended giving honest feedback promptly and in a positive way to ideas, attitudes, activities, and results. Hoerr (1999) intimated that all we do in business is through, with and for people. High-performing companies really value their people. Hoerr also summarized, “Company leaders serve their people by developing, empowering, and challenging them.” In conclusion, the management philosophy of the CMPG organization closely paralleled the views of modern day authors regarding effective leadership/management strategies to maximize work force productivity.

Conclusions Regarding Research Question Five: Urgent

Need or Other Factors Attributable to Success

Research question number five was designed to identify factors related to the urgent need or other factors that could have contributed to program success. The most significant factor in the success of the 1999 Conventional Air Launched Cruise Missile

Replenishment Program was the urgency of need to replenish the Conventional Air Launched Cruise Missile inventory. The urgent need factor created an extraordinarily heightened focus and team synergy on the accelerated missile program; an environment that one participant labeled “intoxicating.” It is noteworthy that this phenomenon (urgent need factor) is not well documented in the current body of literature.

The United States Air Force had expended a significant percentage of the available cruise missile inventory during recent military operations in Iraq and Kosovo. Subsequently during early 1999, the Chief of Staff of the Air Force directed the CMPG program office to begin planning activities to rebuild the Conventional Air Launched Cruise Missiles inventory. Leaders from the Pentagon impressed upon the CMPG staff that the need was indeed great for additional weapons and that the CMPG should pursue every available avenue to accelerate the program (deliver additional missiles in the shortest timeframe possible).

The program manager and the integrated product team acknowledged the need and readily accepted the challenge to plan and execute the missile replenishment program. The team quickly embraced all elements of the proposed project; the multidisciplinary team planned the project very efficiently and effectively and thrived on the challenges and successes throughout the duration of the program. The urgent need for additional weapons inspired the team to excel even beyond reasonable expectations. Juran (1995) admitted that there is an extensive body of literature regarding conventional management theory such as planning, organizing, directing, staffing, and controlling. However, Juran said with respect to conventional theory, planning fails to distinguish

between planning objectives for breakthrough and planning objectives for control. The issue is that most organizations put emphasis on the calendar (short term vs. long term) rather than the purpose for planning (breakthrough vs. control). Juran's definition of breakthrough is change, a dynamic, decisive movement to new, higher levels of performance. In many respects, the integrated product team was driven to "higher levels of performance" – clearly driven to a great extent by the urgent need for additional weapons.

The management principles were very important to the success of the program; however, they were in-place prior to the initiation of the accelerated program and were not altered to accommodate the new program. The management principles (planning, organizing, staffing, directing, and controlling) had served other missile programs within the CMPG organization very well. Similarly, it was critical that experienced, well-trained personnel were readily available for the assignment. However, the urgent need for additional weapons was clearly a distinguishing factor (in comparison to all other programs within the CMPG organization) in the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. The accelerated missile program received a significant amount of "visibility" from senior leaders within the Air Force that had a vested interest in the success of the program. The added visibility boosted the awareness of the team and served as a constant reminder that indeed their efforts were very important; the additional weapons were important to the Air Force and to the defense of the nation.

Numerous other factors contributed to the success of the 1999 Conventional Air Launched Cruise Missile Replenishment Program. Many characteristics of the integrated product team were previously addressed in the study. The team, as a whole, was well trained, very experienced, possessed great team dynamics, and was very motivated to succeed. However, another prominent factor in the success of the replenishment program was dedication to duty and a strong sense of patriotism. The team developed a strong sense of pride and patriotism as the program was developing and continued throughout the seven-month time frame. The urgent need for additional weapons, often expressed by senior officials including the CMPG leaders, played a role in the positive and productive attitudes that helped shape the team. The missile team took ownership of the 1999 missile replenishment program. They appeared to celebrate every accomplishment and show/express disappointment at any failure or program setback encountered.

Although the study focused on the efforts of the government and support contractors, the program was the product of both the government and contractor personnel. The Boeing Company, with a strong desire to remain preeminent in the missile business, performed the actual hands-on missile labor. Furthermore, the contractor, in parallel, invested a tremendous amount of planning and preparation for the missile conversion work that was accomplished in Seattle, Washington and St. Charles, Missouri. A close working relationship with the Boeing team was also vital to the success of the project. The company fully cooperated with the government program office in planning and executing the accelerated project. Boeing also expressed a strong sense of urgency, pride in workmanship and commitment to meet the demanding goals

and objectives established by the Air Force. The accelerated program was a remarkable team effort between the government and industry. The two parts spoke with one voice – communication on the project (horizontal and vertical) was exceptional.

Two additional factors were significant and helped reduce program risk. The Boeing Company was the original equipment manufacturer of the weapon system and an almost identical replenishment program was completed during 1992-1994. From a technical standpoint, the earlier similar replenishment program simplified the planning, conserved schedule and in general reduced cost, schedule and technical risk on the project. The design and performance aspects of the missile were well understood as well; Boeing designed and produced the missile as a nuclear weapon system in the early 1980s.

The Air Force (and Boeing) was fortunate to have some missile modifications/upgrades already underway when the 1999 replenishment program was initiated. The ongoing projects were in work since approximately 1994. The 1999 accelerated replenishment program would have required additional time and funding had those initiatives not been in place.

Overall Conclusions

Seven questions that were included in the instrument queried the sample population regarding their views about the *significance* of leadership and management factors. Two additional questions provided data regarding urgent need and other factors that may have contributed to the success of the missile program. Participant responses for each of the questions are summarized in Table III.

TABLE III
SIGNIFICANCE OF FACTORS

Factors	Participants												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Leadership Role Significance	S	S	S	S	S	S	S	S	I	S	S	S	S
Overall Leadership Significance	S	S	S	S	S	S	S	S	S	S	I	I	S
Significance Program Planning	N	S	S	S	S	S	S	S	S	S	S	S	S
Significance of Organization	S	S	S	S	S	S	S	S	S	S	I	S	S
Significance of Staffing	S	S	S	S	S	S	S	S	S	I	N	S	S
Significance of Directing	S	I	S	I	S	S	S	S	I	S	S	S	S
Significance of Control	N	S	S	S	S	S	S	I	N	S	S	N	S
Urgent Need Factors	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Other Factors	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y

Note: S = Significant Factor In Success; N = Not Significant Factor In Success; I = Inconclusive; Y = Yes - Urgent Factors; N = No Other Factors.

The percentage of the sample population (thirteen) that believed leadership and management factors were significant in the success of the accelerated missile program are summarized as follows:

- CMPG Leadership Role – 92%
- Overall Leadership – 85%
- Program Planning – 92%
- Organizing – 92%
- Staffing – 85%
- Directing – 77%
- Controlling – 69%

The above statistics tend to reinforce the strengths of the integrated product team that were revealed in the data collected from the sample population. The CMPG leaders were an organizational strength, particularly during the program initiation phase. The integrated product team was very well trained, experienced, and strongly motivated and were afforded a great degree of freedom to plan, organize, and execute the accelerated missile program. Clearly the integrated product team took ownership of the program. As a result and not surprisingly, 92% of the sample population reported that planning and organizing were significant in the success of the program – the team was heavily involved in these functions.

Directing and controlling were not reported to be as significant; 77 and 69 percent, respectively. The team operated autonomously much of the time and required infrequent direction from the senior leaders in the organization. Similarly, the control

function was not prominent in the success of the program. Again, the team was very well trained, experienced, and strongly motivated to succeed. The accelerated program stayed on-track and suffered very few miscues or delays during the entire course of events. Therefore fewer control mechanisms (metrics) and information feedback to senior leaders for potential direction/corrective action were needed. The senior CMPG leaders empowered the integrated product team and thus the directing and controlling functions were not as significant as perhaps on projects of similar scope and complexity. Similarly, when the accelerated project began, most of the personnel were in-place on the Conventional Air Launched Cruise Missile Team. Consequently, the population sample reported that program staffing was not as significant (82%) as one might expect.

Two additional questions were included that addressed urgent need and other factors that may have contributed to the success of the accelerated project. A very high percentage (92%) of the sample population reported that the urgent need factor contributed to the success of the program. The urgent need factor was very significant with respect to team motivation and cannot be overstated. Numerous other factors contributed to the success of the program. Ninety-two percent of the sample population enumerated other factors that contributed to the success of the program. The most significant were as follows:

- Patriotism/ strong sense of duty and team and individual pride.
- An almost identical conversion program was completed in 1994 (previous experience).
- The same company (Boeing) performed both conversion programs.

Recommendations

A review of this study resulted in the following recommendations that are related to each of the five broad research questions.

Recommendations Pertaining to Leadership Characteristics

Additional Research on Leadership Characteristics. Two key characteristics of the missile integrated product team that enabled the senior leaders to delegate significant authority and responsibility were relatively high levels of individual training and experience. Further research is recommended on a project similar in scope and complexity with a less trained and experienced work force and a similar approach to empowerment of the team. The level of success achieved with a team having less training and experience yet afforded considerable freedom to manage a project could have broad implications for empowerment and effective leadership style.

Recommendations Pertaining to Leadership Influence

The major focus of the leadership portion of the study centered on the senior leaders in the CMPG organization. The findings and conclusions revealed that almost all the data reflected the leadership style and accomplishments of the most senior personnel in the CMPG organization. However, acts of leadership occur daily at all levels within an organization including the functional team member level. A study of leadership and management principles at the lowest levels in an organization could provide valuable insights to include similarities and differences between hierarchical levels and the

resulting effects of each. For example, the research could include only non-supervisory and non-management personnel and yet focus on the employment of leadership and management principles.

Recommendations Pertaining to Management

Principle Effectiveness

Additional Research on Management Principle Effectiveness. The study revealed that the integrated product team was very well trained and possessed a high level of experience. Some, in-fact, may have been assigned to the initial Conventional Air Launched Cruise Missile Conversion Program during the early 1990s. The study could be broadened to survey the backgrounds of the participants on the 1999 accelerated program to collect data and perhaps gain insights into past training and work experience that may have contributed to the high level of achievement. The training and experience data could illuminate background factors that enabled the participants to excel when faced with leadership and management challenges that were the focus of this study. The results could be helpful to organizations that suffer from less than adequate workforce productivity and/or effectiveness.

Recommendations Pertaining to Management

Principle Influence

Additional Research on Management Principle Influence. The data revealed that directing and controlling were not as significant and did not influence the successful

execution of the accelerated program to the extent of planning, organizing and staffing functions. The study concluded that the qualifications and experience of the integrated product team ultimately reduced the significance of directing and controlling within the project. The data suggested that the team was to a great extent self-directed on a day-to-day basis. The team also enjoyed a high level of success that also reduced the role (perception perhaps) of the control function (measurement tools such as metrics).

The study could be expanded to better understand and document the relationship between worker qualifications/experience and the directing and controlling management principles.

Recommendations Pertaining to Urgent Need and Other Factors

Additional Research on Urgent Need and Other Factors. The conclusions gleaned from this research revealed that the urgent need for additional Conventional Air Launched Cruise Missiles was a significant motivational factor for the CMPG team. Ninety-two percent of the sample population reported that urgent need was a factor in the success of the accelerated missile program. Additional research to better understand the motivational factors associated with an urgent need could yield valuable insights for application to time sensitive projects. The Designated Acquisition Commander noted that if an organization could generate a similar sense of urgency, enthusiasm, and excitement that permeated the cruise missile team, people would love going to work and expend enormous time and energy to be successful.

Follow-up Studies to Broaden the Scope of this Study. The scope of this study was limited to participants on the accelerated project from Tinker Air Force Base and supporting contractor personnel. In addition, the Designated Acquisition Commander, the most senior Air Force official responsible for the missile program, participated in the study. The contributions of the study participants were in the general areas of leadership and management. However, much credit for the success of the accelerated missile program goes to industry – primarily the Boeing Company. Boeing was the lead contractor that was responsible for accomplishing the task of converting the weapons from a nuclear to a non-nuclear configuration with a conventional warhead.

A follow-on study to examine leadership, management and other factors within the Boeing Company during calendar year 1999 that contributed to the accomplishment of the missile conversion in only seven months could also be insightful. One might assume that the industry experiences paralleled the government in many areas, however others factors such as an earlier, almost identical conversion effort may have been very significant to the level of success achieved. Some of the same Boeing personnel may have participated on both projects although they were separated by approximately eight years. These factors may have had significant influence on the level of success that was achieved and could be of value to industry for future application.

Concluding Remarks

The 1999 Accelerated Conventional Air Launched Cruise Missile Replenishment Program was a truly remarkable achievement in Air Force weapon system acquisition.

The spirit and cooperation of Air Force military, civilian, and support contractor personnel to focus on getting the job done as quickly as humanly possible was the same spirit and cooperation that led the team to freely contribute to this study. The Designated Acquisition Commander remarked that if the circumstances and team characteristics could be replicated, people would gladly go to work and contribute all that would be required in order to achieve success in any endeavor – no argument from the author of this study.

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APPENDIXES

APPENDIX A
INTERVIEW GUIDE RESEARCH
QUESTIONS

LEADERSHIP:

1. Do you believe that CMPG leadership played a significant role in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
2. Describe the leadership style and characteristics of the senior leaders in the Cruise Missile Product Group.
3. How did CMPG leadership affect your ability to accomplish the tasks that were assigned to you?

PLANNING:

4. What effect did program planning have on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program?
5. In your opinion, was planning a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
6. How did planning influence your ability to successfully execute your assigned responsibilities?

ORGANIZING:

7. What effect did organizing have on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program?
8. In your opinion, was organizing a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
9. How did organizing influence your ability to successfully execute your assigned responsibilities?

STAFFING:

10. What effect did program staffing have on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program?
11. In your opinion, was staffing a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
12. How did staffing influence your ability to successfully execute your assigned responsibilities?

DIRECTING:

13. What effect did directing have on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program?
14. In your opinion, was directing a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
15. How did directing influence your ability to successfully execute your assigned responsibilities?

CONTROLLING:

16. What effect did controlling have on the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program?
17. In your opinion, was controlling a significant factor in the successful execution of the Conventional Air Launched Cruise Missile Replenishment Program? Why? Why not?
18. How did controlling influence your ability to successfully execute your assigned responsibilities?

OVERALL ASSESSMENT:

19. Overall, how significant was the CMPG leadership in the execution of the Conventional Air Launched Cruise Missile Replenishment Program?
20. In your opinion, what factors related to the urgent need for additional missiles also contributed to program success?
21. What other factors might have contributed to the success of the project (team or group dynamics for example)?

DEFINITION REFERENCE

Planning: The process of developing the mission and objectives and determining how they will be accomplished. Planning includes short and long term plans for the accomplishment of goals.

Organizing: Establishment of internal organizational structure of the organization (teams for example). The focus is on division, coordination, and control of tasks and the flow of information within the organization.

Staffing: Filling positions with qualified people to accomplish the work. Specific activities in this function include recruiting, hiring, training, evaluating and compensating the workforce.

Directing: Influencing people's behavior through motivation, communication, group dynamics, leadership, and discipline. The purpose of directing is to channel the behavior of all personnel to accomplish the mission while simultaneously helping them accomplish their own career objectives.

Controlling: Establishment of performance standards based on mission objectives; measuring and reporting actual performance; comparing the two; then taking appropriate action based on the results.

NOTE: Research questions adapted from the following source:
Kutz, M. N. (1998). Characteristics of successful aviation leaders of Oklahoma. Unpublished Doctoral Dissertation, Oklahoma State University, Stillwater, OK.

APPENDIX B

PARTICIPATION LETTER

Dear Sir/Madam:

I am currently working on my doctoral dissertation in the College of Education, Applied Studies in Aviation and Space Education, at Oklahoma State University, where I am conducting research on leadership, management and other factors that contributed to the successful execution of the 1999 Conventional Air Launched Cruise Missile Program (CALCM). You may be chosen to participate in the study because of your involvement in the execution of the program during the 1999 calendar year. I have asked Dr Mary Kutz from Oklahoma State University to assist in my research by selecting participants and conducting face-to-face interviews. This approach will aid in ensuring that you will not be identified with the research data that will be collected from the interview procedure. I would greatly appreciate your participation in setting aside a little time for the interview if Dr. Kutz contacts you. The total CALCM population is relatively small; it is critical to the success of my research that I have a high level of participation. Dr. Kutz may be contacting you to set up an interview at your convenience during the month of August 2000.

The purpose of the study is to examine leadership, management and other factors during the 1999 calendar year that contributed to the successful execution of the accelerated Conventional Air Launched Cruise Missile Program. Insights from the study may provide a useful resource for others in government and industry and serve as a basis for further research in the field of leadership and management.

Attached are samples of the questions that will be used during the interviews lasting approximately one hour. With your permission, an audiotape will be made of the interview to aid in collection of the data. Transcripts of the tapes and notes will be identified by number; the researcher will not have access to the tapes. Once the tapes are transcribed and the data analyzed, all tapes will be destroyed to protect the confidentiality of the person being interviewed. The individual (not associated with the CMPG) that will transcribe the data to written format will be the only person other than Dr Kutz to hear the tapes. A copy of the final report will be presented to you prior to submission to the Graduate College.

Dr. Kutz will contact your office by phone to answer any questions you may have and to obtain permission to interview. In the meantime, if you have any questions about the project please contact Dr. Kutz at 405-720-9091.

I thank you in advance for your cooperation in helping with my research project.

Sincerely,

David A. Kelly Sr.
Graduate Student
College of Education
Oklahoma State University

APPENDIX C

INSTITUTIONAL REVIEW BOARD

APPROVAL FORM

Oklahoma State University
Institutional Review Board

Protocol Expires: 8/6/01

Date: Wednesday, January 31, 2001

IRB Application No ED00288

Proposal Title: A CASE STUDY OF LEADERSHIP, MANAGEMENT AND OTHER FACTORS THAT
CONTRIBUTED TO THE SUCCESS OF THE ACCELERATED CONVENTIONAL AIR
LAUNCHED CRUISE MISSILE PROGRAM

Principal
Investigator(s):

David A. Kelly
741 Hollowdale
Edmond, OK 73003

Mary Kutz
319 Willard
Stillwater, OK 74078

Reviewed and
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

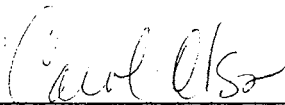
Modification

Please note that the protocol expires on the following date which is one year from the date of the approval of the original protocol:

Protocol Expires: 8/6/01

Please note the title change as requested in the modification submitted on January 25, 2001.

Signature:



Carol Olson, Director of University Research Compliance

Wednesday, January 31, 2001

Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

APPENDIX D

REQUEST FOR SURVEY APPROVAL

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SAN ANTONIO AIR LOGISTICS CENTER (AFMC)
KELLY AIR FORCE BASE, TEXAS

MEMORANDUM FOR HQ AFPC/DPSAS

550 C Street West Ste 35
Randolph AFB TX 78150-4737

FROM: Col (Select) David A. Kelly Sr.

Subject: Request for Survey Approval

1. This letter is to request your approval to conduct interviews of Air Force and contractor support personnel assigned to the Cruise Missile Product Group, Oklahoma Air Logistics Center, Oklahoma City, Oklahoma.
2. I am currently working on my doctoral dissertation in the College of Adult Education, Applied Studies in Aviation and Space Education, Oklahoma State University, where I am conducting research on leadership and management principles related to the successful execution of the 1999 Conventional Air Launched Cruise Missile Program (CALCM). In order to complete the research project, I must collect data from those individuals that participated in the Conventional Air Launched Cruise Missile Replenishment Program that began in January, 1999. I have asked Dr Mary Kutz from Oklahoma State University to assist in my research by conducting the interviews. This approach will aid in ensuring that participants will NOT be identified with the research data that will be collected from the interview.
3. The purpose of the study is to examine the leadership and management principles embraced by the Cruise Missile Product Group in the successful execution of the accelerated Conventional Air Launched Cruise Missile Program. Findings of the study could be beneficial to the Air Force and other organizations that may encounter similar leadership and management challenges.
4. This survey will be performed IAW AFI 36-2601. Section 2 of this AFI lists several areas of information required by your office before an approval is granted. This information is listed in attachment 1. I understand the sensitivity to the time requirements of Air Force program management personnel. As such, the interviews are structured to take less than an hour to complete.
5. I believe that this effort is of high value to the Air Force and ask your quick and positive response to the effort. The point of contact for this survey is Col (sel) David Kelly, OC-ALC/LAM, DSN 339-5349 or 405 739-5349.

3 Attachments

1. AFI 36-2601 Survey Request Information
2. Proposed Mail Out Survey
3. Proposal for Research Project

Attachment 1
AFI 36-2601 Section 2 Requested Data

I. The following is specific data requested IAW AFI 36-2601, section 2

A. Survey purpose. The purpose of the interviews is to draw unbiased, qualitative data regarding leadership and management principles embraced by the Cruise Missile Product Group in the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program.

B. How will the results be used? The interview results will be analyzed against a review of literature dealing with leadership and management principles. The objective of the research is to gain insights and assess the influence of leadership and management principles on the successful execution of the 1999 Conventional Air Launched Cruise Missile Replenishment Program.

C. POC. The Point of Contact for the survey is Col(s) David A. Kelly, OC-ALC/LAM, Tinker AFB, Oklahoma, DSN: 339-5349 and Commercial: (405) 739-5349.

D. Engineering the sample population.

- (1) What is the population of interest? The populations of interest are Air Force Military, Civil service, and contractor personnel who participated in the management and execution of the Conventional Air Launched Cruise Missile Replenishment Program during calendar year 1999.
- (2) Sample size. The sample size is estimated to be approximately 15 and the interview will take approximately 60 minutes to complete.
- (3) How will the sample be selected? A purposive sample will be taken from the total population of those individuals that participated in the Conventional Air Launched Cruise Missile Replenishment Program during calendar year 1999. The total population is approximately 40 people.

E. How will the data be collected? The interviews will be conducted face-to-face and the data will be destroyed after use.

F. When and how often will people be surveyed? The survey will be completed within 30 days of approval. This is intended to be a one-time survey.

APPENDIX E

SURVEY APPROVAL



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE PERSONNEL CENTER
RANDOLPH AIR FORCE BASE TEXAS

7 June 2000

MEMORANDUM FOR OC-ALC/LAM (LT COL KELLY)

FROM: AFPC/DPSAS
550 C Street West Ste 35
Randolph AFB TX 78150-4737

SUBJECT: Request for Survey Approval (Your Memo, 23 May 00)

Your proposed interview protocol related to the Conventional Air Launched Cruise Missile Program is approved and is assigned a survey control number of USAF SCN 00-56. This control number is authorized until 30 Sep 00.

We wish you success in this interview project and in your academic pursuits. And...congratulations on your selection to the grade of colonel. If you have questions about this survey approval action, please don't hesitate to call me at DSN 665-2448.

A handwritten signature in black ink, appearing to read "Charles H. Hamilton", is positioned above the typed name.

CHARLES H. HAMILTON
Chief, Survey Branch

2

VITA

David A. Kelly Sr.

Candidate for the Degree of

Doctor of Education

Thesis: A CASE STUDY OF LEADERSHIP AND MANAGEMENT IN THE
CONVENTIONAL AIR LAUNCHED CRUISE MISSILE REPLENISHMENT
PROGRAM

Major Field: Applied Educational Studies

Biographical:

Personal Data: Born in Sanford, North Carolina, December 15, 1951, the son of
Mr. and Mrs. Colin J. Kelly.

Education: Graduated from Kecoughtan High School, Hampton, Virginia in June,
1970; received Bachelor of Science degree in Marketing Management from
Virginia Polytechnic Institute and State University Blacksburg, Virginia in
June, 1978; received Master of Business Administration degree with a
major in Management and Supervision from Central Michigan University,
Mount Pleasant, Michigan in August, 1985. Completed the requirements
for the Doctor of Education degree with a major in Applied Educational
Studies from Oklahoma State University, Stillwater, Oklahoma in May,
2001.

Experience: Served as an enlisted member in the United States Air Force from
January 1971 through December 1974. Commissioned as a second
lieutenant in the Air Force after graduation from Virginia Tech in 1978.
Continuous military active duty status from commissioning until present,
completing numerous duty assignments primarily in the field of program
management.

Professional Memberships: University Aviation Association.