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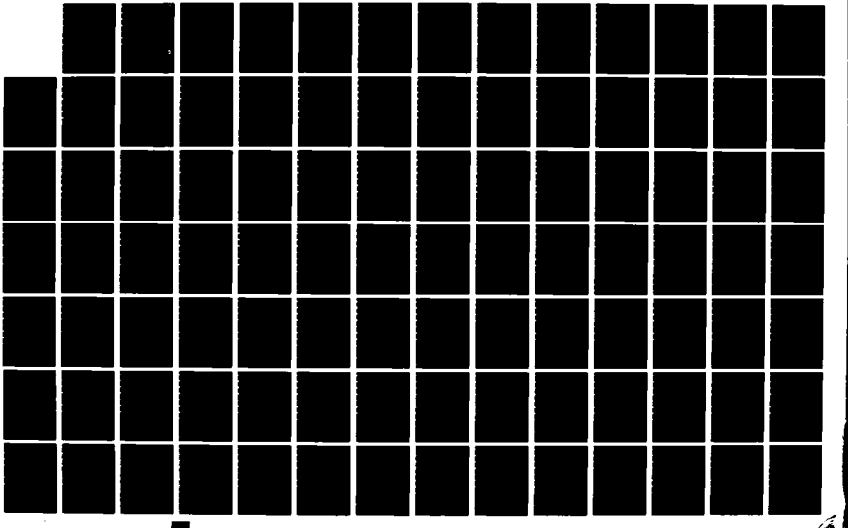

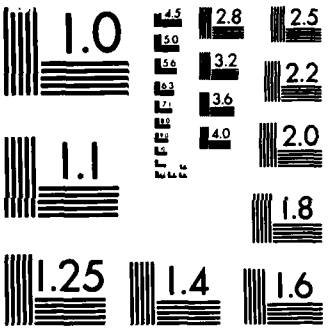

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AN ANALYSIS TO DETERMINE THE MANAGEMENT TRAINING REQUIREMENTS FOR CIVIL ENGINEERING SUPERINTENDENTS AND FOREMEN

THESIS

James R. Mills
Captain, USAF

AFIT/GEM/LSM/85S-14

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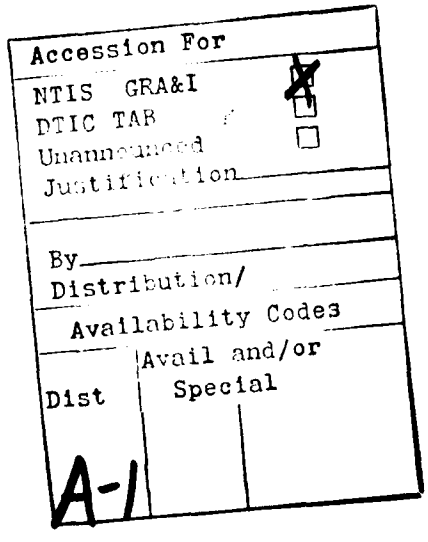

AFIT/GEM/LSM 85S-14

AN ANALYSIS TO DETERMINE THE MANAGEMENT TRAINING REQUIREMENTS FOR CIVIL ENGINEERING SUPERINTENDENTS AND FOREMEN

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment for the
Requirements for the Degree of
Master of Science in Engineering Management

James R. Mills, B.S.
Captain, USAF

September 1985

Approved for public release; distribution unlimited

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James R. Mills

Table of Contents

		page
Acknowledgements		ii
List of Figures		v
List of Tables		vi
Abstract		vii
I.	Introduction	1
	Overview	1
	Background	1
	Purpose of this Study	9
	Justification	10
	Assumptions	10
	Research Objectives	11
	Research Questions	11
	Scope and Limitations	12
II.	Literature Review	13
	Career Development Courses	13
	Department of Defense Courses	15
	Specialized Courses	23
	Other Courses	25
	Base Civil Engineering Supervisor Course	31
	Summary	32
III.	Methodology	33
	Introduction	33
	Population of Concern	34
	Data Collection	35
	Applied Analysis	37
IV.	Analysis and Results	44
	Interview Response	44
	Course Comparison	65
	Summary	76

V. Conclusions and Recommendations 80

Project Overview 80
Conclusions 81
Recommendations 84
Summary 85

Appendix A: List of Interviews 87

Appendix B: Interview Guide 91

Appendix C: Condensed Version of Taxonomy of Educational Objectives 95

Appendix D: Outline of the History of Management Theories 104

Appendix E: Courses Reviewed 105

Bibliography 106

Vita 111

List of Figures

Figures		Page
1.1	Portion of BCE Organizational Structure	4
1.2	Contributions to Management Development	6
1.3	Categories of Skills Needed	7

List of Tables

Tables		Page
1.1	Specific Duties of a BCE Superintendent	2
1.2	Specific Duties of a BCE Foreman	3
4.1	Breakout of Course Coverage on General Management Principles	66
4.2	Breakout of Course Coverage on Roles of the First-Line Manager	67
4.3	Breakout of Course Coverage on Discipline	68
4.4	Breakout of Course Coverage on Vehciles	70
4.5	Breakout of Course Coverage on Effective Writing (general)	70
4.6	Breakout of Course Coverage on Effective Writing (Air Force)	71
4.7	Breakout of Course Coverage on Motivation	72
4.8	Breakout of Course Coverage on Civil Engineering Management	73
4.9	Breakout of Course Coverage on Job Coordination	73
4.10	Breakout of Course Coverage on Managing Conflict	74
4.11	Breakout of Course Coverage on Civil Service Relations	75
4.12	Breakout of Course Coverage on Manpower Authorization System	75
4.13	Breakout of Course Coverage by Subject Areas 1 through 6	77
4.14	Breakout of Course Coverage by Subject Areas 7 through 12	78
4.15	Breakout of Course Coverage by Subject Areas 13 through 17	79
5.1	The Ranking of Management Courses	82

Abstract

The purpose of this thesis was to determine the deficiencies in management training available to the civil engineering superintendent and foreman. The primary research objective was to identify deficient areas of management training in 17 subject areas obtained from Correll's thesis. A secondary objective was to identify where changes could be made to correct identified deficiencies. Interviews were conducted with AFIT faculty members to establish the depth of coverage, the specific subject material, and the instructional methods needed to provide this management training. The results of the interviews were consolidated into learning objectives using Bloom's Taxonomy and compared with courses available to civil engineering superintendents and foremen. The learning objectives showed that the depth of coverage should be directed to the applied knowledge level. All subject areas were at least covered partially by one or more of the 26 courses reviewed; however, no one course covered every subject area. It was concluded that courses directed at specific areas were able to cover the required material and objectives; whereas, courses presenting a wide range of material could not cover the required objectives in their time frame. Recommendations included restructuring specific courses, realigning general courses, and informing mid-management of available training.

AN ANALYSIS TO DETERMINE THE MANAGEMENT TRAINING REQUIREMENTS FOR CIVIL ENGINEERING SUPERINTENDENTS AND FOREMEN

I. INTRODUCTION

Overview:

This chapter begins with a discussion of the various tasks performed by Air Force Base Civil Engineering (BCE) superintendents and foremen, and reviews the previously identified management training needs for those positions. Next, the specific purpose of this research is explained, and the specific research objectives and questions are described. The chapter closes with a discussion of the scope and limitations of this research project.

Background:

The Base Civil Engineering organization is responsible for maintaining all base facilities (runways, aircraft parking ramps, roads, utilities, buildings, grass, etc.). The BCE organization maintains these facilities either through contracts or through its own in-house forces. The in-house front-line supervisors responsible for the maintenance and repair of the base facilities are the superintendents and foremen. Foremen are responsible for managing a shop of workers that perform only technical duties in one area, such as carpentry or plumbing. Superintendents are

responsible for managing the foremen of closely related shops. For example, a structural superintendent would be responsible for the operation of the carpenter shop, masonry shop, plumbing shop, paint shop, and sheet metal shop. The specific duties for a Superintendent are listed in Table 1.1.

TABLE 1.1

Specific duties of a BCE Superintendent (21:14):

1. Supervises the shop supervisors (foremen).

2. Identifies nonproductive situations and seeks solutions to problems.

3. Helps engineering and environmental planning set up standards for maintaining equipment.

4. Visit jobsites and notes work force practices with particular emphasis on quality control.

5. Conducts informal inspections of assigned shops.

6. Monitors equipment and supply discipline.

7. Supervises the controller.

8. Reviews and evaluates efficiency of installed equipment and systems from existing reports.

9. Provides support for facility and system surveys.

10. Reviews shop schedules to determine problems before and after job assignments.

11. Performs and directs training when needed.

12. Ensures Engineering Performance Standards (EPS) are used when estimating the recurring work program.

The specific duties for the foreman are listed in Table 1.2. In addition, the relationship of the job positions within the BCE organization is shown in figure 1.1.

TABLE 1.2

Specific duties of the BCE Foreman (21:14):

1. Supervise/direct shop activities to maximize production.

2. Ensures compliance with the work schedule.

3. Helps the superintendent set standards of maintenance to include developing the recurring work programs.

4. Ensures workers have tools/equipment to do their work.

5. Identifies requirements for operating supplies and special levels to material control.

6. Reviews the bench stock list for problem areas.

7. Advises superintendent and controller when lack of materials, spare parts, or tools stops work.

8. Enforces supply discipline by making sure that only authorized material and spare parts are on hand.

9. Advises material control of excess, repairable, or condemned equipment, materials, spare parts, and tools.

10. Trains and instructs users of equipment and appliances.

11. Helps the planning function estimate work/job orders.

12. Makes sure that required records and reports are accurate, legible, complete, and submitted on time.

13. Determines capability to do all scheduled work.

14. Exercises direct supervision over assigned personnel.

15. Maintains control of workers through the controller.

16. Makes final inspections of completed work.

17. Identifies training needs and provides the necessary on-the-job training to assigned workers.

18. Makes periodic jobsite checks.

19. Reviews and evaluates energy efficiency of installed mechanical and electrical equipment and systems.

20. Ensures that when trainees are performing productive work, their labor is recorded against that work.

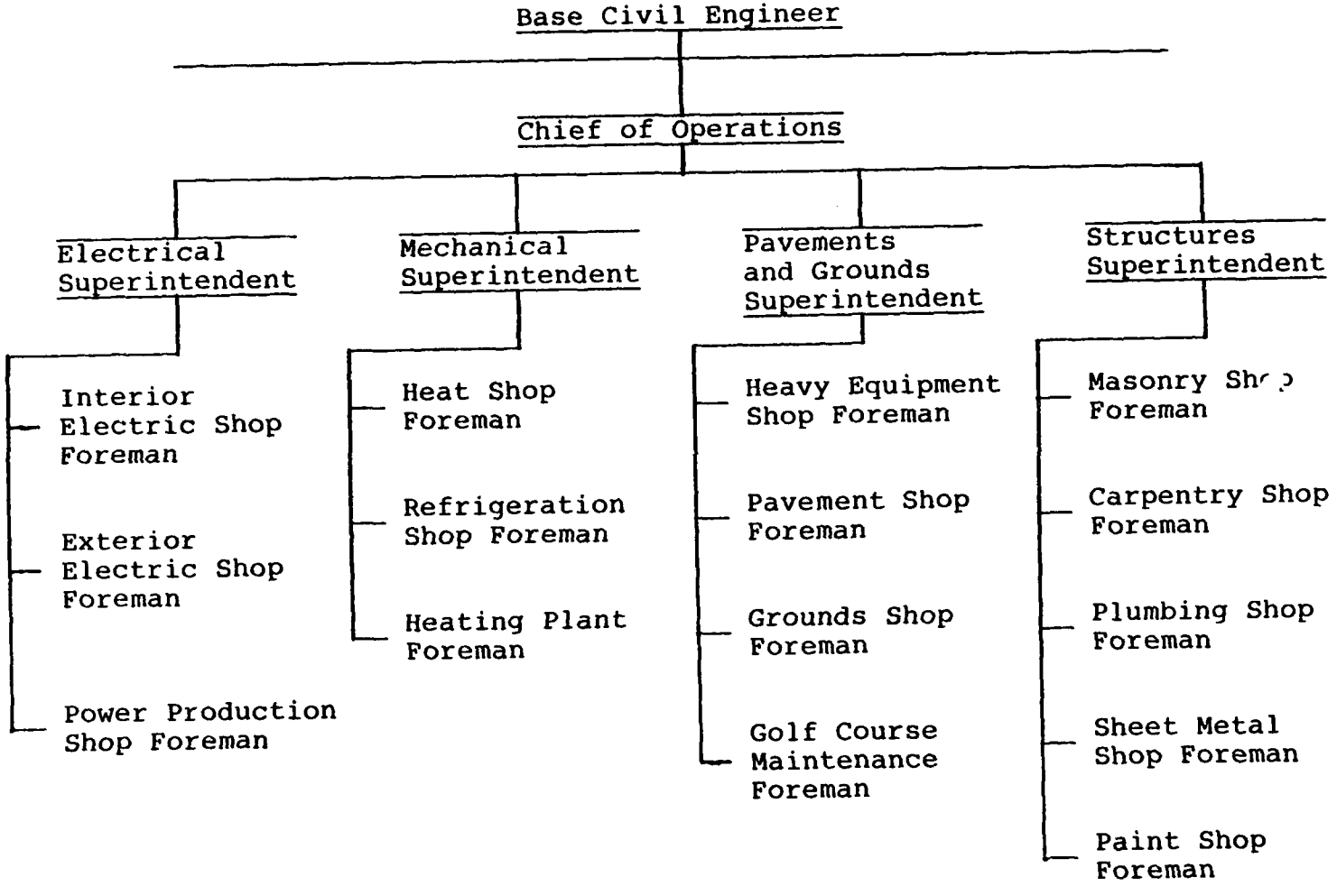

Figure 1.1. Portion of BCE Organizational Structure (Adapted from 4:5)

Both the foreman and superintendent job positions are critical to the overall ability of a base to perform its mission. Usually, the superintendent and foreman have risen through the ranks of the civil engineering organization and have a great deal of valuable work experience. By virtue of the fact that they have come up through the ranks, the superintendents and foremen are familiar with the work and may end up doing the work rather than effectively using their assigned personnel (40:4-5). In order for the superintendent and foreman to effectively use his craftsmen, he needs to understand and be able to apply management principles. This indicates they need some sort of management education or development. The management development provided should mesh the needs of the organization with the needs, interests and abilities of the individual so that present job performance is improved (46:395). Since the superintendent and foreman are the backbone of the civil engineering operations, their management effectiveness is important, because any loss of efficiency or productivity in their area could directly (by the loss of use of a runway) or indirectly (by the loss of support facilities) reduce a base's mission capability.

Even though management development is an individual process, it depends on a "nurturing environment" (46:395). This environment consists of two active agents: the employee's superior and the company itself (46:396). It is the responsibility of all levels of management above the

superintendent and foreman level, as well as, the superintendents and foremen themselves to ensure that a proper environment exist in order to develop the management skills. The extent to which each of these three interested parties (the company, the superior, and the employee) can actually contribute to the development process is illustrated in figure 1.2.

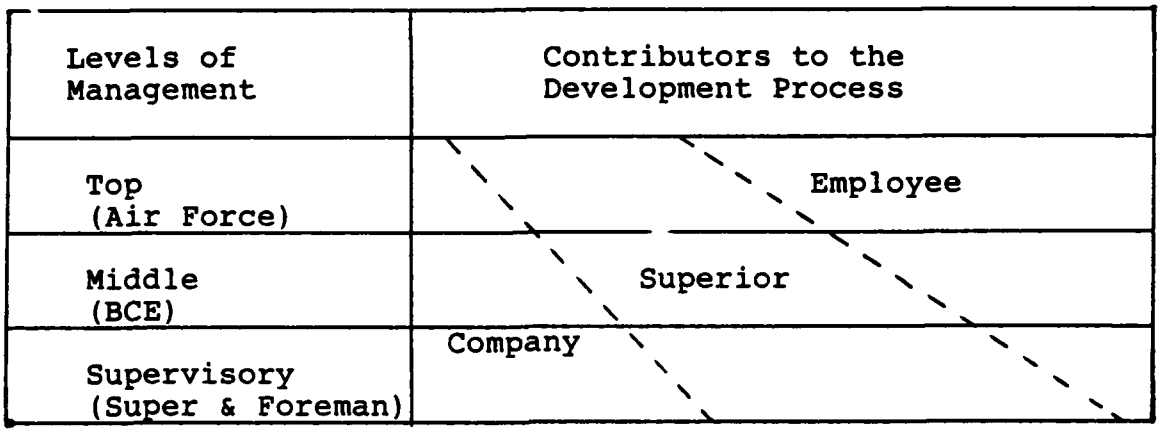

Figure 1.2. Contributors to Management Development (Adapted from 46:396)

As shown in the above figure, the majority of the contribution for the management development process for BCE superintendents and foremen must come from the position above the superintendent and foreman level. Both the superior and the company must be committed to providing necessary support before management development can begin (46:396). Management development improves job performance by helping the individual acquire new knowledge, skills and attitudes.

What knowledge and skills are needed by the superintendents and foremen? Basically, these skills can be

grouped into three broad categories: technical and professional skills, interpersonal skills, and managerial and administrative skills. Technical and professional skills are those skills "in which an employee works and includes knowledge, methods and techniques, as well as the ability to use them" (46:396). Examples of interpersonal skills for the BCE superintendent and foreman are "understanding of motivation, effectiveness of relationships with co-workers, sensitivity, and communications" (46:396). Examples of the final category of management and administrative skills are those of "understanding the complexities of the organization, ability to set objectives and goals, problem solving, and controlling results" (46:396). Each of the specific duties listed earlier for both the superintendent and foreman require at least one of these three broad categories of skills. Figure 1.3 indicates the types of skills needed by the different levels of management.

Levels of Management	Skills Needed
Top (Air Force)	Managerial & Administrative
Middle (BCE)	Interpersonal
Supervisory (Super & Foreman)	Technical & Professional

Figure 1.3. Categories of Skills Needed (Adapted from 46:396)

Correll, in his thesis An Analysis of the Training Needs for Civil Engineering Superintendents and Foremen, indicated a possible management training deficiency for these two positions. Correll found that the Chiefs of Operations[1] perceived a need for increased managerial training for both military and civilian superintendents and foremen (4:81). Correll also concluded that one curriculum could be used to provide an adequate program for both military and civil superintendents and foremen (4:81). In addition, Correll identified 17 subject areas in which the Chiefs of Operations perceived training was needed the most (4:82). These 17 subject areas were grouped into six factors, or areas of training needs (4:84).

a. General Managerial Skills.
b. Logistics Management.
c. Effective Writing.
d. Managing Civil Engineering.
e. Personnel Administration.
f. Technical Review.

The first area, "General Managerial Skills," included five of the 17 subject areas: general management, role of the first-line manager, time management, discipline and listening (4:77). The second area, "Logistics Management," includes the two subjects of supply systems and vehicle management (4:77). The third area, "Effective Writing," included general writing skills and Air Force specific writing skills such as preparing staff summaries or writing

1. The Chief of Operation is responsible for the work of the BCE shops and is the supervisor of the superintendents (See Figure 1.1).

Airman Performance Reports (4:78). The fourth area, "Managing Civil Engineering," covers motivation, civil engineering management, job coordination, and managing conflict (4:76). The fifth area, "Personnel Administration," covers the skills necessary to deal with the human resource; that is, civil service relations and manpower authorization system (4:76). The final area, "Technical Review," included a technical update and a superintendent update (4:77). This final area is needed to insure supervisors obtain sufficient knowledge of new systems and procedures to provide adequate guidance to their subordinates in accomplishing technical tasks (4:79).

Correll's six areas correspond to the three broad categories of technical and professional skills, interpersonal skills, and managerial and administrative skills mentioned earlier. Correll's first three management factors, general managerial skills, logistics management, and effective writing, fall into the area of managerial and administrative skills. The next two management factors, managing civil engineering and personnel administration, come under the area of interpersonal skills. The last management factor, technical review, identified by Correll would be classified as a technical and professional skill.

Purpose of this Study:

According to HQ AFESC/DEMG, there has not been an Air Force wide formal evaluation of training programs

established to meet the specific management training needs of the Civil Engineering superintendents and foremen. The purpose of this study was to identify deficiencies in making training available to the BCE superintendents and foremen in management areas identified by Correll. A management training program needs to be established to cover the management and leadership peculiarities of the BCE superintendents and foremen in addition to general management training. A second purpose of this study was to evaluate the AF management training courses available to the BCE superintendent and foreman, and to identify where course material changes might better align management training program.

Justification:

There are two reasons why this study was undertaken. First, Engineering and Services personnel at the Air Staff level have shown interest in this area by submitting this thesis topic to AFIT's School of Systems and Logistics. Second, as stated earlier any loss of efficiency or productivity in the civil engineering area could directly or indirectly reduce a base's mission capability.

Assumptions:

a. There are fundamentals of management which apply to all supervisors regardless of level and organization (see figure 1.2.).

b. There are management tasks unique to BCE superintendents and foremen (see specific duties listed on pages two and three of this chapter).

c. BCE superintendents and foremen can be considered collectively as first-line supervisors (see figure 1.2 and 1.3).

d. That the management training factors found in Correll's thesis adequately identified the area of overall management training needs.

Research Objective:

In order to establish an appropriate training program, it was necessary to accomplish the following:

a. Determine the type of courses that are presently available to BCE superintendents and foremen.

b. Evaluate the amount and type management training provided in these courses that would be beneficial if received by BCE superintendents and foremen and to identify deficiencies.

c. Build a training package to rectify the identified deficiencies or shortfalls.

d. Determine how and when to provide any revised training program for the superintendents and foremen.

Research Questions:

To satisfy the research objectives, the following questions were answered during this study.

a. What depth of management training is needed by BCE superintendents and foremen?

b. What current AF training programs provide management training?

c. What are the actual management training deficiencies or shortfalls identified by comparing the AF training programs available to BCE superintendents and foremen with their training needs?

d. By what means could training programs rectify the deficiencies? Should one alter a training program already in being, or should a new training program be established?

Scope and Limitations

The limitations around which this project was analyzed are as follows:

a. Only the training needs of the BCE superintendents and foremen were discussed.

b. The evaluation of the course material was accomplished without actual attendance of the courses reviewed. It is solely dependent on a review of the subject areas identified in a course syllabus.

c. The subject areas reviewed within the courses were limited to only those management areas identified in Correll's thesis.

II. Literature Review

This chapter expands upon some of the background material presented in Chapter 1 and consists of three sections. The first section presents a review of the Air Force Extension Course Institute (ECI) Career Development Courses (CDC) to identify any management education and training applicable to both military and civilian BCE superintendents and foremen. The second section provides a review of the Department of Defense (DOD) courses which include ECI courses other than career development that are available to the BCE superintendents and foremen, and pertain to management theory and practice. The third section provides a review of the Base Civil Engineer Supervisor course offered at Sheppard AFB, Texas. The final section summarizes the literature review related to this thesis.

Career Development Courses:

The Career Development Courses (CDC) are designed to assist individuals in gaining knowledge for career progression. The Air Force enlisted career fields have seven tiers (17:8). The beginning tier occurs when an airman comes on active duty and has not been assigned a career field; he/she has an Air Force Specialty Code (AFSC) of 99000. The next tier provides the first meaningful level of training in a particular career field; this is when an

Airman has been assigned to a career field, but has not received any training. An example would be an Electrician with an AFSC of 54210; where, the fourth numerical figure in an AFSC indicates the individual's skill level. After completing apprentice training, either through a basic course taught at an Air Training Command base or through correspondence from ECI, the Airman is awarded a three skill level, AFSC 54230. The next skill level attainable in career development is the five level, AFSC 54250. After obtaining the five level in career field and obtaining NCO status, Airmen are usually given some supervisory responsibilities. The career development courses are reviewed from this level forward.

The CE career development courses that are reviewed in this chapter are those for advancement in skill levels to the five and seven level. The three level courses are not examined because they are designed for obtaining apprenticeship into a CE career field and have little or no coverage of management theory or practice (17:8). One five-level and one seven-level course are reviewed, since all career development correspondence courses have the same management training coverage at a given skill level.

A person with a skill level of five and in a supervisory position usually has the responsibilities of assigning work, reviewing completed work for compliance, and evaluating performance of subordinates (17:10). The five-level CDC course bases its management coverage on this

aspect of the supervisor's workload in designing its course. In the five-level course, management training covers the areas of the CE organizational structure and its mission, resource management, the supervisor's and trainer's responsibilities, management principles, and problem solving techniques (17:1-65). This is the first level at which the shop supervisor or foreman responsibilities are discussed (17:64), but no management theories are presented.

A person who possess a seven skill level, AFSC 54270, is called a technician and usually has supervisory responsibilities of planning and scheduling work, assigning work, establishing work standards, performing evaluations on subordinates and subordinate's work, and conducting training (17:11). The management coverage is same as the of the five skill level (20:85,109; 17:64,84). Again, there are no management theories presented.

Department of Defense Courses

Air Force Professional Military Education:

The Professional Military Education (PME) courses deal with supervision and management in addition to Air Force policy. PME courses are offered in residence and by correspondence to the military personnel based on their grade; however, they are only offered by correspondence to civilians based on their position and grade. Only PME correspondence courses were reviewed in this study, since they are basically tailored from the in-residence courses,

and since they are available to both military and civilian personnel in supervisory positions.

The first PME course listed in the ECI catalog of courses that would be available to BCE superintendents and foremen is the USAF Senior Noncommissioned Officer Academy Associate Program, ECI course 8A. This course is in two volumes. Volume one deals with communication skills. It includes reading effectiveness, effective communications, listening effectively, the writing process, readable writing, and communicating in speech (29:vii). The second volume covers reading improvement and effective writing. Under the area of reading improvement the sub-areas are: content understanding; examining your ability; an improvement program; better eye movement; speedier comprehension; and scanning ahead (30:1-57). The effective writing portion of the second volume covers punctuation and mechanical procedures in sentence construction, the basic sentence- paragraph structure, and a self-help test for effective writing (30).

To take the 8A course, the superintendents and foremen would need to be military in grades of E-7, E-8, or E-9 who have completed a Major Command NCO Academy either by residence or nonresidence, or GS-9 or above and equivalent WG, WL, and WS employees who are occupying management positions and whose requests are approved by their supervisors or commanders (27:1).

The next applicable course listed in the ECI catalog is course 8B titled, "USAF Senior Noncommissioned Officers Academy Nonresident Course." This course is also in two volumes. These volumes cover international relations and force employment and therefore have little effect on management training for BCE superintendents and foremen as presented in this thesis (31; 32). The eligibility for enrolling in this course is the same as that of course 8A, and the successful completion of Course 8A (27:1)

The Senior Noncommissioned Officer Academy correspondence course 8C is a three volume in-depth review of leadership and management. The first volume is on leadership; it explains leadership, it presents the senior noncommissioned officer's (NCO) role in leadership, it relates the behavioral sciences and motivation, and finally, it presents ways of developing a leadership style (33:1,99). The main theme in explaining leadership is to "comprehend that leadership effectiveness depends on both the leader's and the subordinate's perceptions of what leadership demands from individuals" (33:1). In order to present the senior NCO's role in leadership the student is expected to "comprehend the historical, legal, and moral factors that define the NCO's role as a leader" (33:15).

In relating behavioral science and motivation, the 8C course requires the student to "know the basic causes and motivations of human behavior and its relationship to the supervisor's effectiveness in the work environment" (33:34).

This section covers the aspect of interaction with other human beings and explains the fact that success on the job depends on the supervisors understanding of human behavior (R:35-98). Emphasis is placed on the aspects of human behavior, transactional analysis, motivation, and stress (33:35).

In the final section of developing a leadership style, the student is asked to "comprehend the appropriateness of actions a leader must follow in developing an effective style of leadership" (33:99). The purpose of this section is to provide information that enhances the knowledge and leadership skills of the student (33:99). This section points out that the effectiveness of the leaders is critical to the overall organization (33:100). In the concluding section, a brief discussion on counseling theories is presented (33:117).

The second volume of the USAF Noncommissioned Officer Academy course 8C is on management. It explains the management philosophy; reviews the principles and functions of management; presents various management styles, theories, and practices; and reviews problem solving and decision making (34:1-56). This volume covers the aspects of management from the definition of management to decision making process based on the student's knowledge of the leader's use of management theories, techniques, and practices (34:1-75).

Volume three expands on the knowledge obtained in the first two volumes by explaining management in the military. It covers the area of USAF personnel management, USAF resource management, human relations, and the use of computers in Air Force management (35:1-97).

"Command NCO Academy Correspondence Program" is the title of the next section in the ECI's listing of PME courses. This area has three courses: 6A, 6B, and 6C. Correspondence Course 6A deals with military skills and has three volumes. The first volume provides a coverage of Air Force history, organization, and mission. It includes a brief history of Air Force events and achievements, its people and aerospace power, the contributions of the noncommissioned officer, space technology, the military and civilian applications, the organization of National Security, and it concludes with the Air Force organization and mission (10:1-60). The second volume covers Military Law which includes a US Military Justice overview; the maintaining of discipline through nonjudicial means; punishment by court-martial; and the authority of the noncommissioned officer under the Uniform Code of Military Justice (11:1-23). The final volume deals with military training in regards to customs and courtesies (12).

The eligibility criteria for enrollment in course 6A are noncommissioned officers serving in the grades E5 or higher, and civilians serving in the grades of GS5, WG8, WL5, and WS5 or above (27:2).

The second correspondence course under the Command NCO Academy is 6B titled, "Leadership and Management." This course has two volumes. The first deals with leadership and management, while the second volume deals with communication skills. Included in volume one subject material are the duties and responsibilities of NCOs, human relations, the functions of management and leadership, problem solving, method improvements, and counseling (13:2-64). Volume two covers the communication process, listening, reading improvement, speaking effectively, readable writing, lesson planning, the lecture method, the guided discussion method, the teaching interview, the demonstration-performance method, evaluation techniques, and resident training (14:1-91). The eligibility for course 6B is the same as that for course 6A (27:2).

The next section of the Command NCO Academy program is course 6C, "World Affairs." This course has two volumes; "Democracy and Communism, and World Affairs." The first volume is broken up into two areas: one called "Ideology and Government" which covers the history of government, democratic government, totalitarian government, and the conflicting ideologies, the other called "World Power" which covers the elements of power, the instruments of policy, and national objectives (15:1-65). Volume two of 6C presents material on the United Nations and World Alliances, the United States foreign policy, Soviet foreign policy, and the foreign policy of the nonaligned nations (16:1-31). In

addition, volume 2 covers the subject of military conflict to include the spectrum of conflict, international areas of strategic importance, and individual nations of strategic importance (16:37-55). Again, the eligibility for enrolling is the same as 6A provided that the enrollee has completed courses 6A and 6B (27:2).

The final course in the Command NCO Academy program is Course 11 titled, "USAF Supervisor's Course." This course is divided into two volumes. Volume one covers human relations and communications while volume two covers leadership and management. The subject material in volume one includes individual behavior, group behavior, interpersonal relations, values, counseling, interpersonal communications, effective writing and speaking, and Air Force programs and policies (27:2). Volume two covers the supervisor's job responsibility, the professional supervisor, effective leadership, contemporary management theory, the management process, problem solving, discipline, performance standards and training, labor relations, career development, and total force policy (27:2). The eligibility for enrollment into this course is that an airmen be in the grade E-4 or E-5 and be a supervisor. The eligibility for a civilian is that he or she is filling a supervisor position. Course 11 is offered to civilians who find it impractical to attend the USAF Supervisor's Course in residence, which is described as the Base Level USAF Supervisors Course.

The final section listed under ECI's PME course that might possibly be made available to superintendents is the Squadron Officers School (SOS) correspondence program. This PME course is not available to the military superintendents and foremen, since these positions are filled with enlisted grades and SOS eligibility requires that military personnel be officers. The civilians that are eligible for course enrollment are those in the grades of GS-8, WG-10, WL-9, WS-8 and above.

SOS by correspondence is divided into four separate course blocks Foundations of Officership, Communication, Leadership, and USAF and Force Employment. The first block, Foundations of Officership, contains one volume and focuses on the unique role of a commissioned officer and the responsibilities inherent in an officer's position of trust and confidence. The course also includes various concepts and perspectives of officership and leadership. The volume ends with information on officers obligations, career management, and future trends in the military (22).

The second block of study under SOS, Communication, has three volumes. These three volumes have 9 lessons which are designed to teach the student to write and speak in a well-organized, supported, and concise manner (23).

The third block, Leadership, consist of five volumes in which 17 lessons are presented to help the student develop a more accurate concept of human behavior. In addition, students learn how to improve their abilities to

lead, follow, and manage so they can positively influence group morale, cohesion, and effectiveness (24).

The fourth and final block, USAF and Force Employment, contains four volumes with 36 lessons. This block defines the arena where professional Air Force officers operate. In addition, students learn to evaluate the ability of the U.S. forces to perform their mission in the international environment. This blocks also examines the capability and employment concepts of military forces, particularly aerospace forces, which support our national objectives and strategy. Finally students study the international political environment and the major threats to the security of the United States (25).

Specialized Courses

The next section of courses listed in the ECI Catalog are those classified as specialized courses. The courses listed in this area that are available to the superintendents and foremen, and that could contribute to the management training are 1) ECI 1200, Air Force Technical Order System; 2) ECI 1900 (Air Force) Joint Service Supervisor Safety Course; 3) ECI 6603 Management of Value Engineering; and 4) ECI 6604 Introduction to Labor Relations for Air Force Supervisors.

The first two specialized courses are listed under the area of General Military Training. The Air Force Technical Order System course has two volumes: volume one covers the

types of technical orders and their use; while, volume two covers the technical order account management activities (7). Volume one contains the technical order (TO) administration, the types of TOs, the methods of issuing TOs, the Air Force numbering system, the use of TOs, and the TO improvement reporting (27:5). Volume two covers the TO distribution system, the establishing of TO requirements, the requisitioning of TOs, the changing of TO requirements, the documentations for TO files, and the checking of TO files (7).

The second course listed under General Military Training, Joint Service Supervisor Safety Course, contains one volume. This volume titled "Supervisors's Role in Safety" covers the subject material dealing with the role of the supervisor, the preparing of the worker for the job, the supervision of the task, the control of hazards, the control of workplace environment, fire protection, and off-duty safety (26).

The last two specialized courses are listed under the Logistics, Plans, and Programs area. The Management of Value Engineering course contains two volumes and has the equivalency to resident course AFIT/LS PPM 306(DOD), Contractual Aspects of Value Engineering. The course material covers principles and applications of value engineering (VE), VE general, creativity, VE methodology, cost estimating and value comparisons, sources of information, VE projects and change proposals, VE and

development, and VE program management. In addition, the course covers the contractual aspects of VE in the DOD environment, contractual aspects and relationships of VE, application of Value Engineering Incentive and Value Engineering Program Requirement clauses, and guidelines for managing VE programs (19). In order for a superintendent to meet the requirements for enrollment in this course, he must be heavily involved in the monitoring of contracts, or he must assist in the writing of contract specifications (19).

The last specialized course to be reviewed is called Introduction to Labor Relations for Air Force Supervisors. This course has one volume and covers union development from Washington to Wilson (1790-1912), union development from Wilson to present, public policy toward organized labor, union development in the Federal Service, Executive Orders 10988 and 11491, Title VII of the Civil Service Reform Act of 1978, and the implementation of Federal Labor-Management Program (18:1-30). No eligibility requirement was listed for enrollment in this course (27:8).

Other Courses

The other course listed in the the DOD catalog of educational courses that could advance the management training of the superintendent and foremen were AFIT Technical Writing Seminar, US Army Management Engineering Training Activity (AMETA) Management Development Seminar, and AFIT Civil Engineering Management Applications Regional

Seminars (CEMARS). Submission of a DD Form 1556 "Request, Authorization, Agreement, Certification of Training and Reimbursement" is used to enroll students in these courses (37:1-3).

The technical writing seminar is located at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. This is a five day course designed to prepare students to provide clear and useful communication on technical subjects. The material in this course includes training in the analysis of the communication situation, determining the appropriate style, evaluating information and sources, identifying different conventions, and it also presents a review of grammar, expression, mechanics, along with readability standards (37:2-A-67).

The AMETA Management Development Seminar is located at Rock Island, Illinois. This seminar is designed for first and second level managers. It is intended to help the student enrich their working knowledge of the major functions and duties of management and to acquire the skills and abilities necessary to perform their management tasks in a more effective and efficient manner. The subject material covered in this course includes: the roles and functions of the manager, including planning, organizing, leading, and controlling; the technical, human, and conceptual skills of the manager; and the abilities of the manager, including problem solving, setting objectives, developing standards, communicating and motivating. The

course emphasizes the application of required knowledge, skills, and abilities in the person's management situation (37:3-B-41).

The Civil Engineering Management Applications Regional Seminar is offered by the School of Civil Engineering, AFIT, Wright-Patterson AFB, Ohio. This is a three day seminar that is taught at various locations depending on the requests received by the School of Civil Engineering. The course is geared to the first and second level supervisor. The topics covered are working together, communications, problem solving, decision making, engineering and services interfaces, goal setting, customer relations, negotiating for resources, leading, motivating, and managing conflict (1).

In addition to the DOD courses, management training courses are available through the United States Office of Personnel Management National Independent Study Center located in Denver, Colorado. These courses are designed to be independently studied by correspondence and require payment for enrollment. These courses are only available to Federal Service employees. The available courses that could assist first-line managers are Applied Supervision, Position Management and Classification for Supervisors, Solving Performance and Conduct Problems, Basic Labor Relations, Basic Personnel Management, Equal Employment Opportunity, Position Management and Position Classification, Programmed

English Usage, and Writing Short Informational Reports (47:1-33).

The Applied Supervision course is designed to provide the new government supervisor with a foundation in the principles and techniques of supervision. The course covers organization for supervision, job knowledge, and leadership skills (47:5).

The Position Management and Classification for Supervisors course outlines the basic principles of effective position management. It is designed to explain what supervisors and managers need to know about the classification system covering most Federal employees. This course is made up of two lessons that cover the Federal Evaluation System (FES) and procedures for writing FES position descriptions (47:7).

The Solving Performance and Conduct Problems course is designed to explain how to identify and correct problems in employee performance and conduct. The material outlines a number of informal corrective actions together with procedures for some formal actions. In addition, provisions of the Civil Service Reform Act of 1978 are discussed (47:9).

The Basic Labor Relations course is designed to be the first step in acquiring knowledge of the basic principles of Federal labor relations. The material covers an overview of labor-management relations, exclusive recognition, negotiation, the agreement, resolving disputes and

grievances. Also, this course covers provisions of Title VII of the Civil Service Reform Act of 1978 (47:13).

The Basic Personnel Management course is geared to teach participants how to use the Federal Personnel Manual by becoming familiar with its organization and general content. The lessons cover different personnel subjects and require researching parts of the Federal Personnel Manual to find correct answers (47:15).

The Equal Employment Opportunity course is designed to give the student a general knowledge of equal employment opportunity in the Federal government. The material covers historical and legal background, affirmative action, upward mobility, special emphasis programs, the EEO complaint system, and EEO responsibilities and awards (47:17).

The Position Management and Position Classification course consists of two units. Unit A is designed for those who want a basic understanding of position management and position classification principles. Unit B is designed to require students to apply the principles learned in unit A, to perform limited position classification casework, and to write evaluation reports. Students may either enroll in Unit A only, or in both units (47:21).

The Programmed English Usage course is intended to develop and reinforce basic skills in grammar, sentence building, and punctuation. The material is in a programmed instruction format to enable students to progress at their own pace (47:27).

The Writing Short Informational Reports course is designed as a basic course in report writing which presents a step-by-step procedure to follow in gathering data, planning, organizing, writing, and editing short, informational reports (47:33).

In addition to the DOD courses and the courses from the Office of Personnel Management, the Civil Personnel office on each Air Force Base offers a base level civilian supervisors course. This course varies in structure and content from base to base; however the basic requirements for this course do not vary, and are included in the base course material as required in AFR 40-418 Management Training and Development. The course is designed to be a starting point for an individual's development as a supervisor (9). The intention of the course is to pass along information that may help individuals become better supervisors. The course is required for those individuals newly assigned as supervisors, civilian or military, supervising three or more civilian personnel. The course is required to be taken within 90 days of being assigned into a supervisory position; however, at small bases where the turnover of personnel is slow and only one or two on the installation require this training, it is economically infeasible to insure individuals receive training within the 90 day period. When individuals are unable to attend this course within the 90 day period, they are required to take ECI Course 11, USAF Supervisor's Course.

The material that is required and that is covered at each installation's base level civilian supervisors course are supervisor's job and responsibility, management process and theory, understanding employee behavior, interpersonal relations, leadership styles, goal setting, setting performance expectations, recognition, counseling techniques, resolving a performance problem, problem solving, communications, position classification, and the merit system. This material is either taught by contract with an off-base learning institution, or by the PME instructor located on the bases. The option of how to cover the required training is left up to each base (9).

Base Civil Engineering Supervisor Course

The Base Civil Engineer Supervisor course is a three week course taught in a classroom environment at Sheppard AFB, Texas (28:148). The purpose or this course as stated in AFR 50-5:

> Prepares technicians for supervisor or manager positions in a BCE organization by providing instruction on subjects such as stimulating and analyzing personnel behavior; application of behavioral science to personnel management; leadership; functions of management and manager responsibilities; labor-management relations in Federal service; base civil engineer organization; work identification, documentation, authorization, planning, and scheduling; resource management; base engineer automated management system (BEAMS); use of automated products; and labor reporting procedures [28:148].

The prerequisites for attendance are that the applicant be in CE with a military grade of Master Sergeant (MSgt) through Chief Master Sergeant (CMSgt), or be a

noncommissioned officer or civilian who is assigned to a supervisor or manager position (28:148).

The actual material is covered in two blocks. Block one covers leadership and management principles and theories, while block two covers production control and resource management. Block one has five learning units: they are communicative skills, behavioral science, leadership, management, and an introduction to the BEAMS. Block two has eight learning units: they are BCE organization, production control, resources management, scheduling and time accounting, BEAMS products, corrosion control and backflow prevention, warranty/guarantee program, and appliance and food service equipment management (8).

Summary:

The material covered in this chapter are those courses that are available for the superindentent and foreman to attend in order to improve their management skills. This chapter only identified the subject material covered in each course; whereas, the material was based on the comparison of the learning objective of these courses and those objectives obtained in chapter IV from interviews with AFIT faculty members.

III. Methodology

Introduction:

A methodology is a system of principles, practices, and procedures applied to any specific branch of knowledge. This chapter outlines the methodology used to answer the research questions developed in chapter I.

One useful way to approach this research process is to view the process as a four-level hierarchy of questions (42:66). The process usually begins at the most general level with a management problem or question, indicating the research interest. The second level consists of questions that grow out of the management questions and lead to research questions relating to the objectives of the research effort. The next stage is the investigative questions or specific questions which the researcher must answer in order to satisfy the research objective. The final level in this hierarchy are measurement questions, which are used to gather information (42:65-66).

In this study, the management question identified in the thesis title and in chapter I was, "what extent can BCE superintendents and foremen be trained in management skills within the present system?" The research question relating to the objectives of the research was, "what subject areas are most useful to the Civil Engineering superintendents and foremen?" The third level in the

hierarchy were the questions outlined in chapter I as the research questions. The final level of this hierarchy was the measurement level, which involves decisions as to what information can be collected, how this information is categorized, and what type of analysis is appropriate for the information collected. The categorizing and analyzing of the data collected provided help in answering the research questions, satisfying the objectives of the research, and providing the needed information to answer the management question.

This chapter describes the method used in the measurement level, the final level of the hierarchy, which involves the decisions as to what information can be collected, how this information is categorized, and what type of analysis is appropriate for the data collected. The population of interest that sets the initial bound is described first. Next, the method used to collect the information is described, followed by explanation of the measurement. Finally, the methods used to categorize and analyze the information are presented.

Population of concern:

The population of interest in this research consisted of all Air Force training programs that provide some phase of management training to Base Civil Engineering superintendents and foremen. This includes both military and civilians assigned to these positions. It is not always

possible or practical to collect information from every source. In this case, it was determined that information gathered from the Continental United States (CONUS) bases would provide the needed information to answer the research questions.

Data Collection:

Information can be classified into primary and secondary types (42:191). Primary data comes from original sources of material and are collected especially for the task at hand (42:191). Secondary data are found in files and libraries which others have compiled and made available for review (42:191-192). Both types are used in this research project. Chapters I and II resulted from a review of secondary data; however, for this chapter, the data collected will consist of both primary and secondary data. The primary data were in the form of interviews, while the secondary data were in the form of course syllabi.

The method used for gathering information to solve this research problem was to review Air Force sources for management training courses available to the BCE superintendent and foreman. In addition, it was necessary to interview specialists in the different areas of management training to establish a set of standards for first-level supervisor management training in the 17 areas identified in Correll's thesis. The first step was to examine information available in Air Force channels to locate the

amount of training available to superintendents and foremen. The next step was to establish standards or prescriptives to evaluate the management training presently available to BCE superintendents and foremen. This permitted a determination of the type of training that was readily available and whether or not their course material properly covered the management areas identified by Correll. In addition, any possible shortfalls that existed in the present management training available could be identified. After comparing the present course coverage to the standards to determine any training shortfalls, it was necessary to examine possible ways of providing the needed management training (for example, classroom, teleteach, or correspondence). The present management training programs offered to the BCE superintendents and foremen were reviewed for possible alterations. The final step was to make recommendations based on the findings.

"Personal interviewing is a two-way purposeful conversation initiated by an interviewer to obtain information that is relevant to some research purpose" (42:293). For this research effort, personal interviews were made with faculty members of the School of Systems of Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. Three faculty members were interviewed for each area to be evaluated.

The purpose of the interviews was to establish criteria to evaluate course outlines (syllabi) for the courses

offered to base level and the courses offered by professional military education schools against the 17 subject areas identified by Correll. The general type of interview questions asked to determine the required standards of training were:

1. For the subject area in question, what are the learning objectives needed in a management training program for first-level supervisors?

2. What instructional methods are the most appropriate in the coverage of this management material?

3. What specific subject material needs to be covered in order to meet the learning objectives identified in the first question?

4. For this subject area, what criteria would you use and how would one go about rank ordering established courses in their degree of benefit to first-level supervisors?

These questions were asked of various faculty members who provide instruction in the 17 areas identified by Correll. Appendix A lists the faculty members and the areas in which they were interviewed as consultants.

The type of interview used was a focus interview in which the author was attempting to focus discussion on the particular experience of the respondent in the area management training to first-level supervisors (42:215).

Applied Analysis

This section describes how the research questions were analyzed. Each research question is stated, followed by the methods used and the analysis performed to answer that question.

Research Question 1: What depth of management training is needed by the superintendents and foremen?

Correll's thesis was used to identify the basic areas of management training needed by BCE superintendents and foremen. Using these 17 areas, faculty members at AFIT School of System and Logistics were interviewed to help determine the criteria and instructional methods necessary to provide adequate management training for these 17 areas. The interviews were used to establish the depth of coverage required in a management course for each of the 17 areas identified by Correll. The depth of coverage from the interviews depicted whether the material should be directed toward applied or theoretical knowledge. Applied knowledge is considered as having the ability to handle situations which are common to the job itself. An example of this would be a writing course which provided specific instructions on how to properly and clearly document forms that pertain to a person's job. On the other hand, theoretical knowledge is considered the ability to apply knowledge from a given background into an unfamiliar situation. An example of this would be a writing course which provided knowledge on how to properly use the English language in various situations to achieve desired results.

In addition, the interview pointed out specific subject materials that should be covered for each of the 17 areas. The interviews provided guidelines on how to accomplish the depth of management training and recommended subject

material to be included in the courses for proper coverage of the management areas. The subject material is based on the faculty's knowledge of management development training. The interviews also provided inputs on the preferred instructional methods for the management training to be effective.

The information obtained from the different interviews on a subject area was combined together to make up a single set of learning objectives, instructional methods, subject material, and ranking criteria for each subject area. When combining the information for the learning objectives, Bloom's taxonomy of educational objectives was used to help obtain the emphasis given to certain behaviors. Referring to the taxonomy categories in Appendix C helped in specifying objectives. If these subjects are to be included in courses, having clearly specified objectives makes it easier to plan learning experiences and prepare evaluation devices (TAX:2). In summary, the interviews of the faculty in conjunction with Correll's thesis were used to obtain the answer for the first research question.

Research Question 2: What current AF training programs provide management training?

In order to answer this research question the following steps were taken.

a. Review the AF ECI correspondence courses that pertain to management.

The review of AF ECI correspondence courses was accomplished by examining the Air University ECI catalog course listing. The courses selected from this listing were then reviewed by reading the catalog description of the material covered in the courses. The final step in the review was to examine the course syllabi to determine the material covered and the course objectives.

b. Review present Department of Defense (DOD) courses available to BCE superintendent and foreman.

The review of the DOD courses included a study of the DOD catalog to identify courses that would be available to BCE superintendents and foremen and that dealt with some aspect of the 17 management areas identified by Correll. The syllabi of the courses identified were obtained and examined to determine the depth of material covered. The DOD courses included both correspondence courses and residence courses available to BCE superintendents and foremen.

c. Review the present BCE Supervisor Course offered at Sheppard AFB, Texas.

The BCE Supervisor course offered at Sheppard AFB was examined separately from other courses, since it's objective is to provide the necessary management training needed by BCE superintendents, foremen and other BCE first-line supervisors. The review of the course material covered and type of instruction was accomplished by discussing the

course material with the course instructors during an on site visit by the author.

d. Review the management training programs provided by the Major Commands within the CONUS.

Each CONUS Major Command was contacted and requested to provide samples of the Base level Civilian Personnel Management training programs. The syllabi received from the Major Commands were examined along with their policies for providing management training. A review of the material covered was discussed within Chapter II.

> Research Question 3: What are the actual management training deficiencies or shortfalls identified by comparing the AF training programs with the training needs of the BCE superintendent and foreman?

This question was answered by comparing the course syllabi from the courses identified in research question two with the standard criteria identified from the interviews in research question one. The depth of coverage, specific subject material, and instructional method established from the interviews with the AFIT faculty were used as a standard for evaluating the present AF and DOD courses/programs identified as providing management training. This comparison or evaluation was made for each of the 17 management areas identified by Correll.

A comparison was made to establish the differences between the criteria provided by the AFIT's graduate management faculty and the AF and DOD training programs. The courses were evaluated in portion as they pertained to

each of the 17 management areas identified by Correll. For example, the portion of the BCE supervisor course at Sheppard that pertained to conflict management was compared with the information obtained from the AFIT faculty on conflict management, and the portion that pertained to effective writing was compared to the information obtained from the AFIT faculty on effective writing for first-line supervisors. A chart was established to depict the 17 subject areas and the course material coverage found in the analysis. From this chart, shortfalls or deficiencies were identified.

> Research Question 4: By what means could training programs rectify the deficiencies? Should one alter a training program already in being or should a new training program be established?

In order to answer this research question, information was taken from the interviews that dealt with the preferred type of instructional method. The faculty's preferred instructional method was considered as the best possible way to provide the training coverage needed by the BCE superintendent and foreman. The instructional method identified from the interviews was then compared with the instructional method used by the present AF programs. Any shortfalls or deficiencies identified by the chart in the AF programs were reviewed and examined for possible inclusion into AF courses either by changing instructional methods, adding additional subject material, or increasing the depth of coverage in

order to obtain the training standards established within this thesis. The results are discussed in chapter IV.

IV. ANALYSIS AND RESULTS

This chapter is made up of two sections. The first section outlines the responses in the interviews of the AFIT faculty on the 17 subject areas identified in Correll's thesis. The second section presents the results of comparing the recommended course coverage obtained from the interviews with the Air Force courses that cover management areas.

Interview Response

The purpose of this section is to describe the depth of coverage, the specific subject material, and instructional methods needed to provide management training in the 17 subject areas identified by Correll. The Interview guide used during the interviews is in Appendix B. From the interviews listed in Appendix A, the following material listed by subject area was obtained.

1. General Management Principles

Learning Objectives (3):

a. To acquire information on the history of management developments, and to recall and recognize the forerunners of management theory (44).

b. Know and understand the basic principles of management: planning, organizing, coordinating, directing and controlling (38; 44; 48).

c. Know and understand the implication of the basic principles of management for the first-line managers (38; 44; 48).

Instructional Methods (38; 44; 48):

a. Lecture.

b. Possible analysis of case studies.

Specific Subject Material:

a. The subject material should begin with the history of management, as outlined in Apendix D, that gives a general background of management theory (44).

b. In addition, the subject material covered should examine each of the five functions, "planning, organizing, coordinating, directing, and controlling," independently in describing their theories and methods. Examples should be used in explaining each function so the student would become knowledgeable of which functions are influencing actions (38; 44; 48).

Suggested text/reference Material:

Fundementals of Managements, Donnelly, Gibson, and Ivanevich, or any similar management text.

Criteria for Rank Ordering Courses (38; 44; 48):

a. Coverage of material---Should be kept to the coverage of general history and the five basic principles of management to include their implications.

b. Level of course---Course material and objectives should be directed at first-level supervisors, no theory analysis or complicated theories introduced.

2. Roles of the First-Line Manager

Learning Objectives (3):

a. Know and understand the roles, functions and skills of managers in general (38; 44).

b. Develop an understanding of how roles, functions and skills of managers apply to first-line supervisors (38; 44).

Instructional Methods:

a. Lecture/Discussion (38).

b. Role playing (44).

c. Case study analysis (38).

Specific Subject Material:

a. Subject material should cover Henry Mintzberg role theory which includes interpersonal roles (figurehead, leader, and liaison), informational roles (monitor, disseminator, and spokesperson), and decisional roles (enterprenuer, disturbance handler, resource allocator, and negotiator) (39:29-32; 38).

b. This subject material should also include the performance of functions of management for planning, organizing, and controlling (39:746-747; 38).

c. In addition, the material should include Robert L. Katz coverage of technical skills, human skills, and conceptual skills for first-level management (39:27-28; 38).

Suggested text/reference Material:

Fundementals of Managements, Donnelly, Gibson, and Ivanevich, or any similar management text.

Criteria for Rank Ordering Courses:

a. Coverage of material---Should include the above material (38; 44).

b. Level of course---Course material and objectives should be directed at first-level supervisors, no theory analysis or complicated theories introduced (48).

c. Classroom instruction is preferred, because of the possible exchange of ideas between students (38).

3. Time Management

Learning Objectives (3):

a. Develop an understanding of and be able to recognize the problems involved in time management at the supervisory level (38; 44).

b. Know and understand how to use the tools to improve time management (38; 44; 5).

c. Develop a personal action plan of personal improvements using the time management tools (38; 44; 5).

Instructional Methods (38; 44; 5).

a. Lecture/Discussion.

b. Present the film titled "The Time of Your Life."

c. The use of case studies.

Specific Subject Material (38; 5):

a. Present the film on time management, The Time of Your Life, which is a Jerry Kramer Production.

b. Use books that deal with time management, for example: How to Get Control of Your Time and Life, by Alan Lakein, and The Time Trap, by Alec R. Mackenzie.

c. In addition, the subject material should cover the six steps or tools of time management. They are: 1) list goals. 2) Make a daily "TO DO" list. 3) Start with "A"s.

4) What is the best use of my time right now? 5) Handle each piece of paper only once. 6) Do it now!

Suggested Text/Reference Material:

See items listed in the previous section.

Criteria for Rank Ordering Courses:

a. Coverage of material---Important to analysis how time is spent or wasted, whichever the case (5; 38).

b. Classroom preferred for group discussion (38).

c. Should tie in with management by objective material (44).

4. Discipline

Learning Objectives (3):

a. Understand and be able to explain why the general principle of discipline is soley to improve future behavior (44).

b. Understand the two person concept of disipline and recognize their responsibilities in discipline (44).

c. Know specific avenues available for discipline in dealing with military and civilians employees (38).

Instructional Methods:

a. Lecture/Readings (38).

b. Role playing (44).

Specific Subject Material:

a. Material should show the need for established standards (38; 44).

b. Material should cover the elements of counseling techniques (38).

c. Material should stress the importance of timely, impartial, and consistent disciplinary actions (38).

d. Subject material should contain information on types of disciplinary action available to the supervisory for military and civilian. Examples for military are: 1) Counseling, 2) Written Reprimand, 3) Retraining, 4) Promotion Denial, 5) Removal of NCO Status, 6) Control Roster, 7) Administrative Discharge, and 8) UCMJ actions. Examples for civilian are: 1) Counseling, 2) Written Reprimand, and 3) Demotion or Removal (36:4-12; 44).

Suggested Text/Reference Material:

AFP 30-31 Recognition Guide for Air Force Supervisors
AFR 30-30 Standards of Conduct
AFR 35-10 Dress and Prersonal Appearance of Air Force Personnel

AFR 35-32 Unfavorable Informatin Files, Control Rosters, Administrative Reprimands, and Adonitions
AFR 39-4 Airmen Retraining Program
AFR 39-10 Administrative Seperation of Airmen
AFR 39-30 Administrative Demotion of Airmen
AFP 40-11 Civilian Standards
AFR 40-735 Civilian Conduct
AFR 40-750 Guide to Disciplinary Actions

Criteria for Rank Ordering Courses:

Classroom preferred, however; a correspondence course could cover material adequately (38).

5. Listening

Learning Objectives (3):

a. Know and be able to recognize bad habits/elements of listening (38; 44; 5).

b. Know the techniques to overcome barriers to listening (38; 44).

c. Be able to apply the techniques of better listening through exercises (5).

d. Understand how listening can be applied in supervision (44).

Instructional Methods:

a. Pretest for listening effectiveness (5).

b. Audio, video, and written exercises (5; 38; 44).

c. Discussion (38).

Specific Subject Material:

a. Material should present the facts about listening to include a definition, reasons people talk to each other, the percentage of communications we use in the

form of listening, and the difference between an effective listener and a ineffective listener (5).

b. Material should provide a means for evaluation of a personal profile on the student (44).

c. Material should cover the 10 keys to effective listening; 1) Find areas of interest, 2) Judge content not delivery, 3) Hold your fire, 4) Listen for ideas, 5) Be flexible, 6) Work at listening, 7) Resist distractions, 8) Exercise your mind, 9) Keep your mind open, and 10) Capitalize on fact that thought is faster than speech (8; 5).

Suggested Text/Reference Material:

Your Personal Listening Profile, Sperry Corporation
"The Meaning of Active Listening", Dr. Carl Rogers

Criteria for Rank Ordering Courses:

a. Exercises needed since listening is learned by being exposed to situations (5; 44).

b. Classroom is preferred over video or correspondence material (38).

c. Video is preferred over correspondence material (38).

6. Supply Systems

Learning Objectives (3; 1; 41; 44):

a. Know and be able to identify the different organizations responsible for material support.

b. Know and understand the basic definitions/categories of BCE Supply Support.

Instructional Methods (1; 41; 44):

a. Lecture/Readings.

b. Class Discussion.

Specific Subject Material (1; 41; 44):

a. Material should cover responsibilities of first-line manager, BCE material control, and Base Supply.

b. Material should present instructions on how to read supply reports that pertain to the first-line supervisor's responsibilities.

c. Terms like bench stock, special levels, bills of material, due in from maintenance (DIFM), base service store, and shop stock should be explained.

d. Material should introduce other supply systems like, Contractor Operated Civil Engineering Supply Store (COCESS), Government Operated Civil Engineering Supply Store (GOCESS), Logistical Civil Engineering Support (LOGCES), and the Civil Engineering Material Acquisition System.

e. Material should also cover supply discipline.

Suggested Text/Reference Material:

AFR 67-23 STandard Base Supply Customer's Guide
AFR 85-1 Resources and Work Force Management
AFP 170-1 Resource Manager's Handbook

Criteria for Rank Ordering Courses:

The only criteria for rank ordering a course would be material coverage (1; 41).

7. Vehicles

Learning Objectives (3; 1; 41; 44):

a. Know and understand the terms and procedures associated with the acquisition of various types of Civil Engineering vehicles.

b. Be able to establish requirements for vehicles based on the workforce size and job requirements.

Instructional Methods (1; 41; 44):

a. Lecture.

b. Reading.

Specific Subject Material(1; 41; 44):

a. Define terms like requirement, allowance, authorization, allocation, and available assets.

b. Explain the vehicle acquisition process to include AF Form 1374, use of inter/intra MAJCOM assets, and the vehicle buy program.

c. Explain the operator's, the supervisor's, the BCE vehicle control officer's, and transportation's responsibilities in vehicle maintenance.

Suggested Text/Reference Material:

AFR 77-4 Vehicle Control
AFR 77-310 Vehicle Management: Acquisition, Management, and Use

Criteria for Rank Ordering Courses:

Coverage of material as presented above (1; 41; 44).

8. Effective Writing (general)

Learning Objective (3; 44; 43; 50):

Know and apply written communication and documentation methods necessary to support civil engineering operations.

Instructional Methods (44; 43; 50):

a. Writing exercises.

b. Lecture.

Specific Subject Material (44; 43; 50):

a. Review the machinery of grammar and vocabulary.

b. Review the common barriers in the communication process.

c. Present the six steps for effective writing: 1) Analyze the purpose and audience, 2) Research, 3) Support your ideas, 4) Get organized, 5) Draft and edit, and 6) Evaluate feedback.

Criteria for Rank Ordering Courses (44; 43; 50):

a. Classroom setting with the use of writing exercises to provide feedback to the student is necessary if improvement is expected from the course.

b. Coverage of the material should be kept to the level of first-line supervisors.

9. Effective Writing (Air Force)

Learning Objectives (3; 44; 43; 50):

a. To acquire an understanding of the forms and documents used in civil engineering operations.

b. Know and understand the purpose of forms/documents and why communication/coordination is required for each.

c. Be able to apply communications skills in synthesizing or consolidating information to complete AF forms/documents used within civil engineering.

Instructional Methods (44; 43; 50):

a. Lecture/reading

b. Writing exercises in filling out forms.

Specific Subject Material (44; 43; 50):

a. This material should build on the material covered in the previous section, general effective writing.

b. Forms used within civil engineering operations sections should be covered. The coverage should include AF Form 332, BCE Work Request, AF Form 1135, BCE Real Property Maintenance Request, AF Form 1879, BCE Job Order Record, AF Form 1219, BCE Multi-Craft Job Order, AF Form 637, BCE Job Order Log, AF Form 1841, Maintenance Action Sheet, AF Form 103, BCE Work Clearance Request, AF Form 1469, Materials Cost Transfer For BEAMS, AF Form 919, BCE In-service Work Plan Work Sheet, AF Form 561, BCE Weekly Work Schedule, and AF Form 1734, BCE Daily Work Schedule.

Criteria for Rank Ordering Courses (44; 43; 50):

a. Writing exercises in using the forms are necessary.

b. Content of the course should be directed to forms and documents used by foreman/superintendent.

10. Motivation

Learning Objectives (3):

a. Know and understand the basic elements of the different types of motivational frameworks (48).

b. Know and understand the practical applications of the different types of motivational frameworks (48).

Instructional Methods:

a. Lecture/discussion (48; 38).

b. Case studies for analyzing motivation problems/situations (48).

c. Exercises and films (44; 38).

Specific Subject Material:

a. Subject should cover Maslow's hierarchy of needs theory. These needs are 1) physiological, 2) safety, 3) social, 4) esteem, and 5) self-actualization. Example of each should be discussed (38; 48; 5).

b. Material should also include Herzberg's two-factor theory. These are motivational factors and maintenance factors. Examples for these should also be discussed (38; 48; 5).

c. In addition, the material should include the process theories of motivation, the expectancy theory and the reinforcement theory. These theories concentrate on how motivation occurs (38; 48).

d. Finally, a coverage should be made of the three social motives of affiliation, achievement, and power

as presented by McClelland. This would include the use of a needs perception profile (44).

Suggested text/reference Material:

Fundementals of Managements, Donnelly, Gibson, and Ivanevich, or any similar management text.

Criteria for Rank Ordering Courses:

a. The first criteria would be the coverage of the material. The coverage should include the material above giving many examples. It should also be kept simple and not try to evaluate the different theories, but rather provide food for thought (48; 38).

b. Emphasis should be placed on the working environment of the military organization and show the possible differences in the motivation of military and civilian personnel (44).

c. Classroom instruction is preferred over correspondence, because of the availability of discussion which would include an exchange of ideas between students (38).

11. Civil Engineering Management

Learning Objectives (3; 1; 41; 44):

a. Know and understand the civil engineering organization and its responsibilities.

b. Comprehend the factors of effective teamwork and apply them to the workforce.

c. Comprehend the skills of influencing and apply them in civil engineering.

d. Comprehend the four basic phases of customer relations (initial contact, meeting request, closing, and follow up) and apply them in the civil engineering organization.

e. Comprehend the factors that affect managing in a dynamic environment and apply them.

f. Comprehend the two major phases of creativity and the ten major mental locks to creativity. Know and explain how to overcome the mental locks to creativity.

Instructional Methods (1; 41; 44):

a. Lecture and guided discussion.

b. Case studies.

c. Exercises in group interactions.

Specific Subject Material (1; 41; 44):

a. The first material to be covered should be the mission of the civil engineering organization along with the responsibilities of each component.

b. The next area should be a coverage of the classical approach of organizational design which describes the division of labor, the unity of direction, the centralization of authority, the authority and responsibility, and the unity of command. A comparison should be made with the civil engineering organization.

c. Group interactions should be discussed next. Along with group interactions, motivation should be discussed as it is described in previous section.

d. The subject material should also include the environmental characteristics that affect organizational design. When discussing the external environment the idea of customer relations should be presented to show civil engineering's responsibility to the customer and how customer relations affects their ability to function.

f. The final area of discussion should be directed to creativity. The emphasis should be on identifying the mental locks to creativity and opening the mental locks. The mental locks are 1) the right answer, 2) that's not logical, 3) follow the rules, 4) be practical, 5) avoid ambiguity, 6) to err is wrong, 7) play is frivolous, 8) that's not my area, 9) don't be foolish, and 10) I'm not creative.

Criteria for Rank Ordering Courses (1; 41; 44):

a. Coverage of material--- 1) Civil engineering organization/responsibility, 2) group interactions, and 3) customer relations.

b. Classroom instruction is preferred over correspondence, because the class can have the opportunity to exchange ideas.

12. Job Coordination

This subject area should be covered in both the principles of management and in civil engineering management (38; 48; 44).

13. Conflict Management

Learning Objectives (3):

a. Know the different theories/methods of reducing or eliminating conflict (48).

b. Be able to recognize and explain the advantages and disadvantages presented by the different theories (48).

c. Understand and recognize that conflict is not always bad, and that conflict can be used to achieve goals (44).

Instructional Methods (38; 48; 44):

a. Use role playing techniques (to include role reversal).

b. Use case studies to analyze the implications of using the different models.

c. Have class discussions to review the advantages and disadvantages of the theories presented in the class material.

Specific Subject Material:

a. Subject material should cover models of the conflict process. One model, for example, is proposed by Kenneth Thomas that attempts to answer the question on how conflict comes about. The model consist of four stages: 1) frustration; 2) conceptualization; 3) behavior; and 4) outcome (49:221; 48).

b. Subject should also present the fact that the choice of an appropriate conflict resolution mode depends to a great extent on the situation and the

goals of the group. The five modes of resolving conflict are 1) competing, 2) collaborating, 3) compromising, 4) avoiding, and 5) accommodating (49:224; 45:329; 48).

Suggested Text/Reference Material:

"Understanding and Managing Intergroup Conflict", Eric H. Neilsen, in Managing Conflict and Intergroup Relations
Introduction to Organizational Behavior by Richard M. Steers.

Criteria for Rank Ordering Courses:

a. Coverage of material---Should be kept to the coverage of general models of conflict management and their implications (44; 48).

b. Level of course---Course material and objectives should be directed at first-level supervisors, no theory analysis or complicated theories introduced (48).

c. Classroom instruction is preferred over correspondence, because it provides an opportunity to exchange ideas (38).

14. Civil Service Relations

Learning Objectives (3; 1; 2; 41):

a. To acquire the knowledge to recall the growth and the characteristics of unions in the United States.

b. Know the development and impact of the labor union movement in the Federal Government.

c. Know the procedures involved in conducting a union campaign and election.

d. Be able to identify the rights and responsibilities of employees, management, and the union in the Federal bargaining process.

e. Be able to identify problems which may arise during the life of an agreement and the manner in which they are resolved.

Instructional Methods (1; 2; 41):

a. Lecture/Discussion.

b. Role playing exercises.

Specific Subject Material (1; 2; 41):

a. Material should include a coverage of the history management philosophy and labor relations. Material should start with the public sector unions development and labor legislation.

b. Next, the material should describe the early goals of the Federal sector unions to include Executive Order 10988, Executive Order 11491, and Title VII from the Civil Service Reform Act of 1978.

c. The material should then define terms, such as: supervisor, union, and bargaining unit. From this the course material should cover the process for gaining exclusive recognition.

d. The material should then explain the collective bargaining process.

e. Material should cover the process of living with an agreement to include contract administration, the supervisor-union steward relationship, and the use of official time.

g. In addition, the material needs to discuss the grievances and unfair labor practices.

Suggested Text/Reference Material:

AFM 40-13 Labor Management Relations
AFR 40-701 Employee Management Policy

Criteria for Rank Ordering Courses (1; 2; 41):

Coverage of material---The material covered should be concerned mainly with the working relationship of the supervisor and the union steward. In addition, the supervisor should know what his/her responsibilities are to management and to the employees.

15. Manpower Authorization System

Learning Objective (3; 1; 2; 41):

Comprehend and be able to explain the process of manpower standards for management of personnel as a resource.

Instructional Methods (1; 2; 41):

a. Lecture.

b. Reading.

Specific Subject Material (1; 2; 41):

a. Material should cover how work center descriptions are built, how manpower needs are quantified, how standards are applied, and how exceptions are allowed.

b. Material should explain how workload factors are used in the civil engineering operations section, and how the standard manpower equations are used.

c. Material should explain how a "price out" is obtained by applying the manpower standards to their shop.

d. Material should explain the unit manpower document (UMD).

e. Since the manpower system is complex, the material should provide a list of positions to which the supervisor can turn to for help. They are 1) the Unit Manpower Monitor, 2) the Industrial Engineer, 3) the Real Estate section, and 4) the Manpower Evaluation Team.

f. In addition, the material should cover the personnel system to include civil personnel.

Suggested text/reference material:

AFP 40-1 Guide for Writing Civilian Position Descriptions
AFR 39-1 Airmen Classification Regulation
AFR 40-300 Filling Positions
AFR 40-335 Merit Promotion Program
AFR 40-351 Reduction in Force, Transfer of Function, and Out Placement Assistance
AFR 40-511 Position Classification
AFR 40-512 Classification Appeals

Criteria for Rank Ordering Courses (1; 2; 41):

Coverage of material---The material should cover how the authorized manning in each shop is established, how to use the different computer products, and how to work

within the manpower system to obtain military and civilian positions.

16. Technical Update

This subject area was not included in the scope of this thesis. Technical update courses would vary for different AFSCs within civil engineering.

17. Superintendents Overview

This section would be covered in the teaching of Civil Engineering Management when the responsibilities of each section in civil engineering are reviewed (1; 41; 44).

Course Comparison

This section presents the results of comparing the course syllabi from the courses, identified as having management type material, with the learning objectives established in the previous section from interviews with the AFIT faculty. It should be noted that instructors can make a difference in the presentation and coverage of material (43). However, this thesis did not evlauate the instructor's contribution to the learning process. It was objective in looking at the coverage of the subject material as outlined by the objectives of a course. The following sections are presented in the order of the 17 subject areas. Each section identifies courses that either partially or fully cover the objectives established in this thesis.

1. General Management Principles

Of the nine courses listed in Table 4.1, only the BCE Supervisor Course, the Base Civilian Supervisors Course, and Squadron Officers School cover the recommended learning objectives and subject material. Using the criteria for ranking the courses, the BCE Supervisor Course taught at Sheppard AFB, TX was most appropriate for the objectives.

TABLE 4.1

Breakout of course coverage on general management principles

Course	Coverage of Objectives
CDC	Partial
ECI Course 8C	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Complete
AMETA Mgt Seminar	Partial
AFIT CEMARS	Partial
Base Civilian Supervisor	Complete
BCE Supervisor	Complete

2. Roles of the First-Line Manager

None of the courses reviewed covered the objectives established from interviews with the AFIT faculty. The established objectives were general theory coverage in nature while the courses covered more specific areas. An example is the ECI Course 1900 "Joint Service Supervisor Safety Course" which is only directed at covering the supervisor's role in the area of safety. Using the criteria for ranking the courses with regard to their coverage of

material presented in their course syallibus, the AMETA Management Development Course came the nearest to meeting the objectives. Table 4.2 below depicts the courses that partially covered the subject material.

TABLE 4.2

Breakout of course coverage on roles of the first-line manager

Course	Coverage of Objectives
CDC	Partial
ECI Course 8C	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
ECI Course 1200	Partial
ECI Course 1900	Partial
AMETA Mgt Seminar	Partial
AFIT CEMARS	Partial
Applied Supervision	Partial
Position Mgt & Class	Partial
EEO	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

By combining courses the recommended learning objectives could be met. The combination of the BCE Supervisor Course and the AMETA Management Development Seminar would meet the learning objectives and coverage of the subject material established in this thesis for the roles of a first-line manager.

3. Time Management

The only course that mentions time management in its course material is the BCE Supervisor Course. It does not

cover any of the problems involved in time management, the tools to improving time management, nor does it require the student to develop a personal action plan; however, it does recommend a schedule of how time should be spent by a supervisor in order to accomplish given tasks efficiently.

4. Discipline

None of the courses covered discipline as recommended by the learning objectives established during the interviews. The Squadron Officers School course and the combination of courses ECI 6A with 6B covered the subject material more thoroughly than any of the other courses. Table 4.3 on the following page lists the course that covered portions of the material.

TABLE 4.3

Breakout of course coverage on discipline

Course	Coverage of Objectives
CDC	Partial
ECI Course 8C	Partial
ECI Course 6A	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
Solving Performance & Conduct Problems	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

5. Listening

The two courses that partially covered listening as established by the learning objectives from the AFIT faculty were ECI Course 6B and 8C. However, courses that covered communications such as, the BCE Supervisor Course discussed the barriers to communications which identifies some problems in the listening arena. The communications courses are covered in following sections.

6. Supply System

The only course that covered supply systems in its curriculum was the BCE Supervisor Course. There are courses available at base level supply for learning assigned additional duties; however, none were reviewed as management courses for this thesis.

7. Vehicles

Neither of the courses listed in Table 4.4 cover all recommended learning objectives and subject material. The AFIT CEMARS course discusses the process of working with others in the use of resources to include vehicles, while the BCE Supervisor Course discusses the different types of vehicles in civil engineering operations. Neither course covers the acquisition and justification process in obtaining and keeping vehicles. Other courses only mention vehicles in regards to resources and do not come close to meeting any criteria established in the learning objectives.

TABLE 4.4

Breakout of course coverage on vehicles

Course	Coverage of Objectives
AFIT CEMARS	Partial
Base Civilian Supervisor	Partial

8. Effective Writing (general)

Table 4.5 depicts the course that contribute to improving the writing skills of a first-line supervisor.

TABLE 4.5

Breakout of course coverage on effective writing (general)

Course	Coverage of Objectives
ECI Course 8A	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
AFIT Tech Writing	Complete
AMETA Mgt Seminar	Partial
AFIT CEMARS	Partial
Programmed English	Partial
Writing Short Informational Rpts	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

Of the eleven courses that contained some form of effective writing curriculum, only the AFIT Technical Writing Seminar satifies all the criteria established for the interviews. This was attributed to the AFIT course

having feedback for student evaluation as required in the criteria.

9. Effective Writing (Air Force)

There were no courses that covered all the recommended learning objectives and the recommended subject material for the Air Force Effective Writing subject. The AFIT Technical Writing Seminar had good application of the communication process; however, since it is not directly related to the civil engineer's use, it does not cover the needed forms and documentation as outlined in the learning objectives and the specific subject material. The BCE Supervisor Course had a coverage of the forms and documents used in civil engineering without any evaluation of applying effective communicative skills in accomplishing the forms/documents. Table 4.6 depicts the results of the comparison of the course material and the material obtained from interviews.

TABLE 4.6

Breakout of course coverage on effective writing (Air Force)

Course	Coverage of Objectives
AFIT Tech Writing	Partial
AFIT CEMARS	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

10. Motivation

The subject of motivation is presented in nine of the courses reviewed. None of the courses covered all of the theories identified in the subject material. All courses covered Maslow's and Herzberg's theories; however, the process theories and McClelland theory were not covered in the same course. Table 4.7 shows the results of the comparison.

TABLE 4.7

Breakout of course coverage on motivation

Course	Coverage of Objectives
ECI Course 8C	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
AMETA Mgt Seminar	Partial
AFIT CEMARS	Partial
Applied Supervision	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

11. Civil Engineering Management

Nine course were identified as having some coverage of the learning objectives established from the interviews. The best coverage was provided by AFIT CEMARS and the BCE Supervisor Course, which are taught by civil engineering schools. However, the factors that effect teamwork and the skill of influencing people are covered in depth by the general management courses. Listed in Table 4.8 are the

courses that contribute to the training of the civil engineering management subject.

TABLE 4.8

Breakout of course coverage on civil engineering management

Course	Coverage of Objectives
ECI Course 8C	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
AMETA Mgt Seminar	Partial
AFIT CEMARS	Partial
Applied Supervision	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

12. Job Coordination

As mentioned earily in this chapter, the subject of job coordination would be covered in the general management courses. Table 4.9 lists these management courses.

TABLE 4.9

Breakout of course coverage on job coordination

Course	Coverage of Objectives
ECI Course 8C	Complete
ECI Course 6B	Complete
ECI Course 11	Complete
SOS	Complete
AMETA Mgt Seminar	Complete
AFIT CEMARS	Complete
Applied Supervision	Complete
Base Civilian Supervisor	Complete
BCE Supervisor	Complete

13. Managing Conflict

Managing conflict was found in most of the general management courses; however, none of the courses covered all recommended areas. The missing area was the coverage of the advantages and disadvantages of each theory, and recognizing that conflict can be used for the accomplishment of goals. Table 4.10 depicts the results of the review of conflict management material.

TABLE 4.10

Breakout of course coverage on managing conflict

Course	Coverage of Objectives
ECI Course 8C	Partial
ECI Course 6B	Partial
ECI Course 11	Partial
SOS	Partial
AFIT CEMARS	Partial
Solving Performance & Conduct Problems	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

14. Civil Service Relations

Two of the seven courses reviewed in this thesis covered this subject area in full detail. They are ECI course 6604 and the basic labor relations course offered by the Office of Personnel Management. The other course did not cover the development and impact of the labor unions movements on the Federal government. Table 4.11 lists the course that present material on civil service relations.

TABLE 4.11

Breakout of course coverage on civil service relations

Course	Coverage of Objectives
ECI Course 6604	Complete
AFIT CEMARS	Partial
Position Mgt & Classification	Partial
Solving Performance & Conduct Problems	Partial
Basic Labor Relations	Complete
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

15. Manpower Authorization System

Table 4.12 identifies those courses that would provide some training in the manpower system.

TABLE 4.12

Breakout of course coverage on manpower authorization system

Course	Coverage of Objectives
Position Mgt & Classification	Partial
Basic Personnel Mgt	Partial
Base Civilian Supervisor	Partial
BCE Supervisor	Partial

There were no courses that fully covered the area of Manpower Authorization System. The courses listed in Table 4.12 covered manpower position accounting rather than determining the number of position required by their sections. The BCE Supervisor Course introduced the use of

BEAMS in manpower tracking; however, the course material did not go into the manpower equations that are used for establishing the number of military and civilian personnel assigned to a unit.

16. Technical Update

This area was not included in the thesis research.

17. Superintendents Overview

This area was covered in full by AFIT CEMARS and The BCE Supervisor course.

Summary

This chapter listed the material obtained from the interviews with the AFIT faculty in the form of learning objectives and subject material. This material was then compared with existing courses that contain management material. It was found that no one course covered every subject area. Also, it was shown that some material was not covered as recommended in the interviews. Tables 4.13 through 4.15 summarize the coverage of the subject area by the course. From examining these tables it is found that the BCE Supervisor Course partially covers all but the area of listening. It does cover the barriers of communication, but does not cover listening as recommended in the first section of this chapter. Table 4.13 follows and depicts the coverage of the first six subject areas.

Table 4.13

Breakout of course coverage by subject area 1 through 6
(Reference Appendix B cooresponding subject number)

Course	Subject Areas					
	1	2	3	4	5	6
CDC	X	X				
ECI course 8A						
ECI course 8B						
ECI course 8C	X	X		X	X	
ECI course 6A				X		
ECI course 6B	X	X		X	X	
ECI course 6C						
ECI course 11	X	X		X		
SOS	X	X		X		
ECI 1200		X				
ECI 1900		X				
ECI 6603						
ECI 6604						
AFIT Tech Writing Seminar.						
AMETA Mgt Development Seminar	X	X				
AFIT CEMARS	X	X				
NISC Applied Supervision		X				
NISC Position Mgt & Class		X				
NISC Solving Performance & Conduct Problems				X		
NISC Basic Labor Relations						
NISC Basic Personnel Mgt						
NISC EEO		X				
NISC Programmed English Usage						
NISC Writing Short Informational Reports						
Base Level Civilian Supervisors Course	X	X		X		
BCE Supervisor Course	X	X	X	X		X

Table 4.14 is identical to Table 4.13 in the listing of courses; however, the subject areas are those from

vehicles to job coordination. Appendix B lists the subject areas by number.

Table 4.14

Breakout of course coverage by subject area 7 through 12
(Reference Appendix B cooresponding subject number)

Course	Subject Areas					
	7	8	9	10	11	12
CDC					X	
ECI course 8A		X				
ECI course 8B						
ECI course 8C				X	X	X
ECI course 6A						
ECI course 6B		X		X	X	X
ECI course 6C						
ECI course 11		X		X	X	X
SOS		X		X	X	X
ECI 1200						
ECI 1900						
ECI 6603						
ECI 6604						
AFIT Tech Writing Seminar.		X	X			
AMETA Mgt Development Seminar		X		X	X	X
AFIT CEMARS	X	X	X	X	X	X
NISC Applied Supervision				X	X	X
NISC Position Mgt & Class						
NISC Solving Performance & Conduct Problems						
NISC Basic Labor Relations						
NISC Basic Personnel Mgt						
NISC EEO						
NISC Programmed English Usage		X				
NISC Writing Short Informational Reports		X				
Base Level Civilian Supervisors Course		X	X	X	X	X
BCE Supervisor Course	X	X	X	X	X	X

Table 4.15 is the last of the data presented in this chapter; it covers the subject areas from conflict management to superintendent overview.

Table 4.15

Breakout of course coverage by subject area 13 through 17
(Reference Appendix B cooresponding subject number)

Course	Subject Areas				
	13	14	15	16	17
CDC					
ECI course 8A					
ECI course 8B					
ECI course 8C	X				
ECI course 6A					
ECI course 6B	X				
ECI course 6C					
ECI course 11	X				
SOS	X				
ECI 1200					
ECI 1900					
ECI 6603					
ECI 6604		X			
AFIT Tech Writing Seminar.					
AMETA Mgt Development Seminar					
AFIT CEMARS	X	X			X
NISC Applied Supervision					
NISC Position Mgt & Class		X	X		
NISC Solving Performance & Conduct Problems	X	X			
NISC Basic Labor Relations		X			
NISC Basic Personnel Mgt			X		
NISC EEO					
NISC Programmed English Usage					
NISC Writing Short Informational Reports					
Base Level Civilian Supervisors Course	X	X	X		
BCE Supervisor Course	X	X	X		X

V. CONCLUSIONS AND RECOMMENDATIONS

This chapter provides a brief summary of the study, presents the conclusions based on the results obtained, and outlines recommendations to current curriculum monitors and recommendations for future research.

Project-Overview

This study was undertaken to provide an insight to the deficiencies in management training available to the civil engineering superintendents and foremen. The primary objective of the research was to identify deficient areas of management training in the 17 subject areas obtained from Correll's thesis. The secondary objective was to identify where changes could be made within the available courses to correct identified deficiencies.

Interviews were conducted with AFIT faculty members to establish the depth of coverage, the specific subject material, and the instructional methods to provide management training. The results of the interviews were consolidated into learning objectives using Bloom's Taxonomy and compared with courses available to the civil engineering superintendent and foreman. The results of this comparison were presented in chapter IV. The following section presents the conclusions based on those results.

Conclusions

The following conclusions are presented in relation to research questions that guided the study.

1. What depth of management training is needed by the superintendents and foremen?

Based on the information obtained from the different interviews in the 17 subject areas and the material contained in Bloom's taxonomy of educational objectives, it was found that the depth of coverage in the management courses should be directed toward the applied knowledge level. The learning objectives established from the interviews require the student to be able to handle situations which are common to the job itself.

The only subject area that came close to requiring theoretical knowledge level was managing conflict. The learning objectives for the managing conflict subject area require the student to apply knowledge from the background of different theories into unfamiliar situations. However, the instructional method required that role playing techniques be used in order to reduce the unfamiliarity of the different situations.

The exact depth of coverage for each subject area is presented by the learning objectives/subject material in chapter IV. From the results, it was determined that management subject areas in a course for first-line supervisor should be taught at an applied knowledge level.

2. What current AF training programs provide management training?

Tables 4.13 through 4.15 in chapter IV depict the courses that provide some type of management training. The courses were either directed toward specific areas, or toward coverage of management training in general. Table 5.1 below ranks the courses in the order of the number of subject areas presented in their curriculum.

Table 5.1

The Ranking of Management Courses
(based on number of courses presented)

Course	No. of Subject Areas
BCE Supervisor Course	14
Base Civilian Superivsor Course	11
AFIT CEMARS	10
ECI Course 6B	9
ECI Course 11	8
SOS	8
ECI Course 8C	7
AMETA Management Development Seminar	6
Applied Supervision	4

It should be noted that of the 14 subject areas presented in the BCE Supervisor Course only two were considered fully covered when comparing its curriculum with the learning objectives/subject material established from the interviews. This indicates that management training presented in most curriculums do not properly cover the required material for first-level supervisors.

3. What are the actual management training deficiencies or shortfalls identified by comparing the AF training programs with the training needs of the BCE superintendent and foreman?

The deficiencies are shown in Tables 4.1 through 4.12. Every subject area was covered partically. For example, listening was mentioned in some courses, but the learning objectives/subject material did not coincide with the objectives from the interviews with AFIT faculty.

It was found that courses dealing with a specific area, such as AFIT Technical Writing Seminar, provided full coverage of their subject area. Also, courses that were general in nature, such as AFIT CEMARS, provided partial coverage for over half the subject areas. Courses dealing in one subject area allow the student to concentrate totally in that area. Deficiencies in training are present in every subject area except general management principles, effective writing (general), job coordination, civil service relations, and superintendents overview.

4. By what means could training programs rectify the deficiencies? Should one alter a training program already in being or should a new training program be established?

As mentioned earlier those training programs directed toward one or two specific areas were more likely to fully cover that subject area. This would indicate that existing courses directed at a one or two subject areas could fully cover those topics as outlined in the learning objectives/subject material obtained from the interviews. Also, it would be difficult to build a course that would fully cover all subject area. The length of a single course to fully cover all subject areas would not be practical,

since it would require a longer absence of the first-line manager.

Recommendations

The following sections outline recommendations for changes in the structure of courses and a recommendation for further research.

Structure of Courses Recommendations

Recommendation 1. Courses that are designed to present one or two of the subject areas should be continued; however, they should be restructured to encompass the learning objectives/subject material as identified from the interviews. The expansion or restructuring of these courses would allow the first-line supervisor a means to obtain needed knowledge in a specific subject area.

Recommendation 2. The general management courses should be reviewed for possible realignment to insure coverage of the management needs that are not presented in the specific courses. The BCE Supervisor course, for example, could be revised to insure coverage of the subject area civil engineering management, and discontinue material that is included in the Labor Relations course. The realignment of the general management type courses could provide adequate coverage of all subject area not covered by more specific courses.

Recommendation 3. During restructuring and realigning of the courses, the curriculum developers should closely

coordinate their work to insure proper coverage of each subject area and to keep duplication of effort to a minimum.

Recommendation 4. The supervisors of the first-line managers should be informed of the management courses available to his/her first-line manager supervisors. Currently there is no product that provides civil engineering mid-level managers with a listing of management courses that are available for the first-line manager. The listing should include the subject areas covered by each course. This would allow flexibility in selecting course that cover the specific area needed by the first-line manager.

Recommendation For Further Research

This research along with Correll's research provided the subject areas needed in management training and the depth of material coverage needed in each subject area. Further research should be conducted to survey the civil engineering first-level manager and his supervisor to determine the usefulness of the management courses they have attended.

Summary

The job performance of the superintendent and the foreman are critical for civil engineering in meeting mission requirements. Any loss of effifiency or productivity in their area can directly (by loss of use of a runway) or indirectly (by loss of use of support facilities) reduce a

base's mission capability. It is vital that these first-line managers receive adequate management training.

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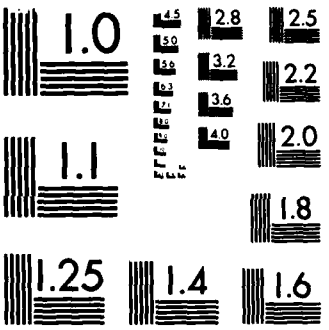

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Appendix A: List of Interviews

SUBJECT AREAS:

General Management Principles

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

Robert P. Steel, PhD
Assistant Professor of Organizational Behavior

Roles of the First-Line Manager

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

Robert P. Steel, PhD
Assistant Professor of Organizational Behavior

Time Management

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

John W. Demidovich, PhD
Professor of Management

Discipline

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

John W. Demidovich, PhD
Professor of Management

Listening

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

John W. Demidovich, PhD
Professor of Management

Supply Systems

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

J. Richardson Johnson, MS
Professor of Management Science

Vehicles

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

J. Richardson Johnson, MS
Professor of Management Science

Effective Writing (general)

Charles R. Fenno, PhD
Assistant Professor of Technical Communication

Freda F. Stohrer, PhD
Associate Professor of Technical Communication

J. Richardson Johnson, MS
Professor of Management Science

Effective Writing (Air Force)

Charles R. Fenno, PhD
Assistant Professor of Technical Communication

Freda F. Stohrer, PhD
Associate Professor of Technical Communication

J. Richardson Johnson, MS
Professor of Management Science

Motivation

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

Robert P. Steel, PhD
Assistant Professor of Organizational Behavior

John W. Demidovich, PhD
Professor of Management

Civil Engineering Management

John W. Demidovich, PhD
Professor of Management

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

J. Richardson Johnson, MS
Professor of Management Science

Job Coordination

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

Robert P. Steel, PhD
Assistant Professor of Organizational Behavior

Managing Conflict

Captain Benjamin L. Dilla, PhD
Assistant Proffessor of Organizational Behavior

J. Richardson Johnson, MS
Professor of Management Science

Robert P. Steel, PhD
Assistant Professor of Organizational Behavior

Civil Service Relations

Donald G. Benoit, MS
Assoicate Professor of Procurement Management

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

Manpower Authorization System

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

Donald G. Benoit, MS
Assoicate Professor of Procurement Management

Superintendents Overview

Major Timothy N. Beally, MS
Instructor of Engineering Management

Captain Gus G. Elliot Jr., MS
Instructor of Civil and Environmental Engineering

J. Richardson Johnson, MS
Professor of Management Science

Appendix B: Interview Guide (adapted from 21:14; 4)

SUBJECT AREAS:

1. General Management Principles
2. Roles of the First-Line Manager
3. Time Management
4. Discipline
5. Listening
6. Supply Systems
7. Vehicles
8. Effective Writing (general)
9. Effective Writing (Air Force)
10. Motivation
11. Civil Engineering Management
12. Job Coordination
13. Managing Conflict
14. Civil Service Relations
15. Manpower Authorization System
16. Technical Update
17. Superintendents Overview

PURPOSE: The purpose of this interview is to establish the depth of coverage, the specific subject material, and the instructional methods in providing management training to first-level supervisors.

DEFINITION: First-Level Supervisor -- An employee who directly supervises workers that perform only technical duties in one area such as carpentry or plumbing. Within civil engineering superintendents and foremen are front-level supervisors that perform management and supervisory function by directing shop workers in the maintenance of base facilities. Specific duties are attached.

QUESTIONS

1. For this subject area, what are learning objectives needed in a management training program for first-level supervisors?

2. What instructional methods are most appropriate in the coverage of this management material?

3. What specific subject material needs to be covered in order to meet the learning objects identified in the first question?

4. For this subject area, what criteria would you use and how would go about rank ordering established courses in their degree of benefit to first-level supervisors?

Specific duties of a BCE Superintendent

1. Supervises the shop supervisors (foremen).
2. Identifies nonproductive situations and seeks solutions to problems.
3. Helps engineering and environmental planning set up standards for maintaining equipment.
4. Visit jobsites and notes work force practices with particular emphasis on quality control.
5. Conducts informal inspections of assigned shops.
6. Monitors equipment and supply discipline.
7. Supervises the controller.
8. Reviews and evaluates efficiency of installed equipment and systems from existing reports.
9. Provides support for facility and system surveys.
10. Reviews shop schedules to determine problems before and after job assignments.
11. Performs and directs training when needed.
12. Ensures Engineering Performance Standards (EPS) are used when estimating the recurring work program.

Specific duties of the BCE Foreman

1. Supervises and directs shop activities to maximize production.

2. Ensures compliance with the work schedule.

3. Helps the superintendent set standards of maintenance to include developing the recurring work programs.

4. Makes sure that workers have tools and shop equipment necessary to do their work.

5. Identifies requirements for operating supplies and special levels to material control.

6. Reviews the bench stock list for problem areas.

7. Advises superintendent and controller when lack of materials, spare parts, or tools stops work.

8. Enforces supply discipline by making sure that only authorized material and spare parts are on hand.

9. Advises material control of excess, repairable, or condemned equipment, materials, spare parts, and tools.

10. Trains and gives operating instructions to users of equipment and appliances.

11. Helps the planning function estimate work/job orders.

12. Makes sure that required records and reports are accurate, legible, complete, and submitted on time.

13. Determines capability to do all scheduled work.

14. Exercises direct supervision over assigned personnel.

15. Maintains control of workers through the controller.

16. Makes final inspections of completed work.

17. Identifies training needs and provides the necessary on-the-job training to assigned workers.

18. Makes periodic jobsite checks.

19. Reviews and evaluates energy efficiency of installed mechanical and electrical equipment and systems.

20. Ensures that when trainees are performing productive work, their labor is recorded against that work.

Appendix C: Condensed Version of the

Taxonomy of Educational Objectives

Cognitive Domain
(extracted from 3:201-207)

KNOWLEDGE

1.00 KNOWLEDGE

Knowledge, as defined here, involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting. For measurement purposes, the recall situation involves little more than bringing to mind the appropriate material. Although some alteration of the material may be required, this is a relatively minor part of the task. The knowledge objectives emphasize most the psychological processes of remembering. The process of relating is also involved in that a knowledge test situation requires the organization and reorganization of a problem such that it will furnish the appropriate signals and cues for the information and knowledge the individual possesses. To use an analogy, if one thinks of the mind as a file, the problem in a knowledge test situation is that of finding in the problem or task the appropriate signals, cues, and clues which will most effectively bring out whatever knowledge is filed or stored.

1.10 KNOWLEDGE OF SPECIFICS

The recall of specifics and isolable bits of information. The emphasis is on symbols with concrete referents. This material, which is at a very low level of abstraction, may be thought of as the elements from which more complex and abstract forms of knowledge are built.

1.11 KNOWLEDGE OF TERMINOLOGY

Knowledge of the referents for specific symbols (verbal and non-verbal). This may include knowledge of the most generally accepted symbol referent, knowledge of the variety of symbols which may be used for a single referent, or knowledge of the referent most appropriate to a given use of a symbol.

*To define technical terms by giving their attributes, properties, or relations.

*Familiarity with a large number of words in their common range of meaning.

1.12 KNOWLEDGE OF SPECIFIC FACTS

Knowledge of dates, events, persons, places, etc. This may include very precise and specific information such as the specific date or exact magnitude of a phenomenon. It may also include approximate or relative information such as an approximate time period or the general order of magnitude of a phenomenon.

*The recall of major facts about particular cultures.

*The possession of a minimum knowledge about the organisms studied in the laboratory.

1.20 KNOWLEDGE OF WAYS AND MEANS OF DEALING WITH SPECIFICS

Knowledge of the ways of organizing, studying, judging, and criticizing. This includes the methods of inquiry, the chronological sequences, and the standards of judgement within a field as well as the patterns of organization through which the areas of the fields themselves are determined and internally organized. This knowledge is at intermediate level of abstraction between specific knowledge on the one hand and knowledge of the universals on the other. It does not so much demand the activity of the student in using the materials as it does a more passive awareness of their nature.

1.21 KNOWLEDGE OF CONVENTIONS

Knowledge of characteristics ways of treating and presenting ideas and phenomena. For purposes of communication and consistency, workers in a field employ usages, styles, practices, and forms which best suit their purposes and/or which appear to suit best the phenomena with which they deal. It should be recognized that although these forms and conventions are likely to be set up on arbitrary, accidental, or authoritative bases, they are retained because of the general agreement or

* Illustrative educational objectives.

concurrence of individuals concerned with the subject, phenomena, or problem.

*Familiarity with forms and conventions of the major types of works, e.g., verse, plays, scientific papers, etc.

*To make pupils conscious of correct form and usage in speech and writing.

1.22 KNOWLEDGE OF TRENDS AND SEQUENCES

Knowledge of the processes, directions, and movements of phenomena with respect to time.

*Understanding of the continuity and development of American culture as exemplified in American life.

*Knowledge of the basic trends underlying the development of public assistance programs.

1.22 KNOWLEDGE OF CLASSIFICATIONS AND CATEGORIES

Knowledge of the classes, sets, divisions, and requirements which are regarded as fundamental for a given subject field, purpose, argument, or problem.

*To recognize the area encompassed by various kinds of problems or materials.

*Becoming familiar with a range of types of literature.

1.23 KNOWLEDGE OF CRITERIA

Knowledge of the criteria by which facts, principles, opinions, and conduct are tested or judged.

*Familiarity with criteria for judgement appropriate to the type of work and the purpose for which it is read.

*Knowledge of criteria for the evaluation of recreational activities.

1.25 KNOWLEDGE OF METHODOLOGY

Knowledge of the methods of inquiry, techniques, and procedures employed in a particular subject field as well as those employed in investigating

particular problems and phenomena. The emphasis here is on the individual's knowledge of the method rather than his ability to use the method.

*Knowledge of scientific methods for evaluating health concepts.

*The student shall know the methods of attack relevant to the kinds of problems of concern to the social sciences.

1.30 KNOWLEDGE OF THE UNIVERSALS AND ABSTRACTIONS IN A FIELD

Knowledge of the major schemes and patterns by which phenomena and ideas are organized. These are the large structures, theories, and generalizations which dominate a subject field or which are quite generally used in studying phenomena or solving problems. These are at the highest levels of abstraction and complexity.

1.31 KNOWLEDGE OF PRINCIPLES AND GENERALIZATIONS

Knowledge of particular abstractions which summarize observations of phenomena. These are the abstractions which are of value in explaining, describing, predicting, or in determining the most appropriate and relevant action or direction to be taken.

*Knowledge of the important principles by which our experience with biological phenomena is summarized.

*The recall of major generalizations about particular cultures.

1.32 KNOWLEDGE OF THEORIES AND STRUCTURES

Knowledge of the body of principles and generalizations together with their interrelations which present a clear, rounded, and systematic view of a complex phenomenon, problem, or field. These are the most abstract formulations, and they can be used to show the interrelation and organization of a great range of specifics.

*The recall of major theories about particular cultures.

*Knowledge of a relatively complete formulation of the theory of evolution.

INTELLECTUAL ABILITIES AND SKILLS

Abilities and skills refer to organized modes of operation and generalized techniques for dealing with materials and problems. The materials and problems may be of such a nature that little of no specialized and technical information is required. Such information as is required can be assumed to be part of the individual's general fund of knowledge. Other problems may require specialized and technical information at a rather high level such that specific knowledge and skill in dealing with the problem and the materials are required. The abilities and skills objectives emphasize the mental processes of organizing and reorganizing material to achieve a particular purpose. The materials may be given or remembered.

2.00 COMPREHENSION

This represents the lowest level of understanding. It refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material of seeing its fullest implications.

2.10 TRANSLATION

Conprehension as evidenced by the care and accuracy with which the communication is paraphrased of rendered from one language or form of communication to another. Translation is judged on the basis of faithfulness and accuracy, that is, on the extent to which the material in the original communication is preserved although the form of the communication has been altered.

*The ability to understand non-literal statements (metaphor, symbolism, irony, exaggeration).

*Skill in translating mathematical verbal material into symbolic statements and vice versa.

2.20 INTERPETATION

The explanation or summarization of a communication. Whereas translation involves an objective part-for-part rendering of a communication, interpretation involves a reordering, rearrangement, or a new view of the material.

*The ability to grasp the thought of work as a whole at any desired level of generality.

*The ability to interpret various types of social data.

2.30 EXTRAPOLATION

The extension of trends or tendencies beyond the given data to determine implications, consequences, corollaries, effects, etc., which are in accordance with the conditions described in the original communication.

*The ability to deal with the conclusions of a work in terms of the immediate inference made from the explicit statements.

*Skill in predicting continuation of trends.

3.00 APPLICATION

The use of abstractions in particular and concrete situations. The abstractions may be in the form of general ideas, rules of procedures. or generalized methods. The abstractions may also be technical principles, ideas, and theories which must be remembered and applied.

*Application of the phenomena discussed in one paper of the scientific terms or concepts used in other papers.

*The ability to predict the probable effect of a change in a factor on a biological situation previously at equilibrium.

4.00 ANALYSIS

The breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit. Such analyses are intended to clarify the communication, to indicate how the communication is organized, and the way in which it manages to convey its effects, as well as its basis and arrangement.

4.10 ANALYSIS OF ELEMENTS

Identification of the elements included in a communication.

*The ability to recognize unstated assumptions.

*Skill in distinguishing facts from hypotheses.

4.20 ANALYSES OF RELATIONSHIPS

The connections and interactions between elements and parts of a communication.

*Ability to check the consistency of hypotheses with given information and assumptions.

*Skill in comprehending the interrelationships among the ideas in a passage.

4.30 ANALYSIS OF ORGANIZATIONAL PRINCIPLES

The organization, systematic arrangement, and structure which hold the communication together. This includes the "explicit" as well as "implicit" structure. It includes the bases, necessary arrangement, and the mechanics which make the communication a unit.

*The ability to recognize form and pattern in literary of artistic works as a means of understanding their meaning.

*Ability to recognize the general techniques used in persuasive materials, such as advertising, propaganda, etc.

5.00 SYNTHESES

The putting together of elements and parts so as to form a whole. This involves the process of working with pieces, parts, elements, etc., and arranging and combining them in such a way as to constitute a pattern or structure not clearly there before.

5.10 PRODUCTION OF A UNIQUE COMMUNICATION

The development of a communication in which the writer or speaker attempts to convey ideas, feeling, and/or experiences to others.

*Skill in writing, using an excellent organization of ideas and statements.

*Ability to tell a personal experience effectively.

5.20 PRODUCTION OF A PLAN, OR PROPOSED SET OF OPERATIONS

The development of a plan of work or the proposal of a plan of operations. The plan should satisfy requirements of the task which may be given to the student or which may he may develop for himself.

*Ability to propose ways of testing hypotheses.

*Ability to plan a unit of instruction for a particular teaching situation.

5.30 DERIVATION OF A SET OF ABSTRACT RELATIONS

The development of a set of abstract relations either to classify or explain particular data or phenomena, or the deduction of propositions and relations from a set of basic propositions or symbolic representations.

*Ability to formulate appropriate hypotheses based upon an analysis of factors involved, and to modify such hypotheses in the light of new factors and considerations.

*Ability to make mathematical discoveries and generalizations.

6.00 EVALUATION

Judgement about the value of material and methods for given purposes. Quantitative and qualitative judgments about the extent to which material and methods satisfy criteria. Use of a standard of appraisal. The criteria maybe those determined by the student or those which are given to him.

6.10 JUDGMENT IN TERMS OF INTERNAL EVIDENCE

Evaluation of the accuracy of a communication from such evidence as logical accuracy, consistency, and other internal criteria.

*Judging by internal standards, the ability to assess general probability of accuracy in reporting facts from the care given to exactness of statement, documentation, proof,etc.

*The ability to indicate logical fallacies in arguments.

6.20 JUDGMENTS IN TERMS OF EXTERNAL CRITERIA

Evaluation of material with reference to selected or remembered criteria.

*The comparison of major theories, generalizations, and facts about particular cultures.

*Judging by external standards, the ability to compare a work with the highest known standards in its field--especially with other works of recognized excellence.

Appendix D: Outline for the History of

Management Theories
(obtained from 44)

	SCIENTIFIC	CONCEPTUAL	HUMAN
		Peters/Waterman	Graves
	Crosby	Blanchard	
	Juran	Ouchi	
1980	Deming		McClelland
	Kepner/Tregoe		Massie
1960			Herzberg
		Drucker	Blake/Mouton
			McGregor
			Maslow
	McCloskey		
1940			Roethlisberger
			Mayo
		Davis	
		Fayol	L. Gilberth
		Urwick	
1920			
			Follett
	Taylor	Brandeis	
	Barth	Emerson	Gnatt
	F. Gilbreth		

Appendix E: Courses Reviewed

Courses

Career Development Courses (CDC).

Senior NCO Academy, ECI course 8A, 8B, and 8C.

Command NCO Academy, ECI course 6A, 6B, and 6C.

ECI course 11, "USAF Supervisor's Course."

Squadron Officers School (SOS).

ECI 1200, Air Force Technical Order System.

ECI 1900 (Air Force) Joint Service Supervisor Safety Course.

ECI 6603 Management of Value Engineering.

ECI 6604 Introduction to Labor Relations for Air Force Supervisors.

AFIT Technical Writing Seminar.

AMETA Management Development Seminar.

AFIT Civil Engineering Management Applications Regional Seminars.

NISC Applied Supervision.

NISC Position Management and Classification for Supervisors.

NISC Solving Performance and Conduct Problems.

NISC Basic Labor Relations.

NISC Basic Personnel Management.

NISC Equal Employment Opportunity.

NISC Position Management and Position Classification.

NISC Programmed English Usage.

NISC Writing Short Informational Reports.

Base Level Civilian Supervisors Course.

Base Civil Engineering Supervisor Course.

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The purpose of this thesis was to determine the deficiencies in management training available to the civil engineering superintendent and foreman. The primary research objective was to identify deficient areas of management training in 17 subject areas obtained from Correll's thesis. A secondary objective was to identify where changes could be made to correct identified deficiencies. Interviews were conducted with AFIT faculty members to establish the depth of coverage, the specific subject material, and the instructional methods needed to provide this management training. The results of the interviews were consolidated into learning objectives using Bloom's Taxonomy and compared with courses available to civil engineering superintendents and foremen. The learning objectives showed that the depth of coverage should be directed to the applied knowledge level. All subject areas were at least covered partially by one or more of the 26 courses reviewed; however, no one course covered every subject area. It was concluded that courses directed at specific areas were able to cover the required material and objectives; whereas, courses presenting a wide range of material could not cover the required objectives in their time frame. Recommendations included restructuring specific courses, realigning general courses, and informing mid-management of available training.

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