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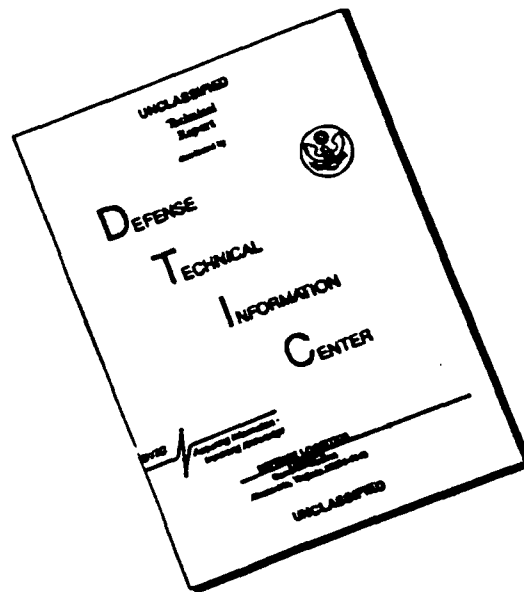
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CIVIL ENGINEERING COMBAT EXPERIENCES
DURING THE VIETNAM WAR: PHASE II

THESIS

Norman P. Schaefer, B.S.I.E.
Captain, USAF

AFIT/GEM/DEE/90S-15



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CIVIL ENGINEERING COMBAT EXPERIENCES DURING THE VIETNAM WAR:
PHASE II
THESIS

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

Norman P. Schaefer, B.S.I.E.
Captain, USAF

September 1990

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Preface

This thesis was the second phase of a program of research in the Civil Engineering (CE) combat behavior area. The objective of this research was to replicate and expand the research done in phase one by Captain Gary B. Lauson (1989) and to identify significant aspects of the combat experiences of CE personnel in Vietnam. This study was designed to describe the Vietnam combat experience as seen through the eyes of CE veterans who experienced enemy fire. Tentative conclusions are presented on the problems faced by CE in Vietnam as well as how CE personnel could have been better prepared for combat in Vietnam.

Many people were very helpful in accomplishing this study. First, my advisor, Captain Pedro J. Camejo, helped me immensely and was very understanding. Also, Lieutenant Colonel John A. Ballard was a major player in ensuring that I stayed on the right track. I am also deeply indebted to the Vietnam veterans who agreed to share a significant and, in some cases, painful part of their lives with me. Without their cooperation and insights into the Vietnam combat environment, this research could not have been completed.

Finally, I thank my wife, Sarah, and our children, Chris and Alyse. Without their love, understanding, patience, and support, I would not have been able to endure the rigors of AFIT.

Norman P. Schaefer

Table of Contents

	Page
Preface.	ii
Abstract	vi
I. Introduction	1
Overview.	1
Background.	1
Justification for this Research.	1
Prior Research	3
Specific Problem and Purpose.	4
Research Objectives	5
Investigative Questions	6
Scope and Limitations	6
Conclusion.	7
Thesis Organization	8
II. Literature Review.	9
Overview.	9
Captain Lauson's Thesis	10
A Study of Leadership in Combat	15
Civil Engineering Combat Support Doctrine	17
Prime BEEF Wartime Task Standard.	20
Summary	24
III. Methodology.	25
Overview.	25
Method Justification and Background	25
The Experience Survey (Structured Interview).	28
Selection of Respondents.	32
The Questioning of Respondents.	35
Conducting the Interviews	37
Changes Made to Interview Questions	38
Content Analysis.	40
Purpose for Methodology	41
IV. Results.	43
Overview.	43
The Participants.	45
Description of Enemy Attacks.	48
Return of Fire.	49
Bonding With the Unit	51
Unit Leadership	52
Description of an Effective Combat Leader	54
Morale Factors.	55

	Page
Biggest Problem in the Combat Zone.	57
Recommendations For Combat Preparation.	58
Desired Training.	60
Initial Reaction to Enemy Attack.	62
Training and Perceptions of Preparedness.	63
 V. Discussion	 66
Overview.	66
Investigative Question One.	67
Investigative Question Two.	69
An Inadequate Supply System.	70
Insufficient Combat Training	71
Inadequate Preparation for the Assignment	72
Insufficient Technical Training.	72
Investigative Question Three.	74
Indoctrinate on What to Expect	75
Provide Realistic Combat Training.	75
Ensure Officers and NCOs Know How to Supervise.	76
Provide Better Technical Training.	77
Investigative Question Four	78
 VI. Conclusions and Recommendations.	 82
Comparision of Conclusions.	82
Research Objective One	82
Final Comments Regarding the Conclusions Recommendations	89
Research Objective Two	89
The Author's Final Comments	91
 Appendix A: Interview Questions	 93
Appendix B: Data on Participants	98
Appendix C: Description of Enemy Attacks	99
Appendix D: Return of Hostile Fire	102
Appendix E: Bonding With The Unit	104
Appendix F: Quality of Unit Leadership	107
Appendix G: Traits of Effective Combat Leaders	109
Appendix H: Comparison of Unit Cohesion and Leadership.	112
Appendix I: Helpful Factors In The Combat Zone	114

	Page
Appendix J: Perception of Biggest Problem	117
Appendix K: Recommendations for Combat Preparation. . .	120
Appendix L: Desired Training	123
Appendix M: Initial Reaction to Hostile Fire.	126
Appendix N: Training and Perceptions of Preparedness. .	128
Appendix O: Boredom and Leave	131
Bibliography	133
Vita	135

Abstract

This thesis was a replication and an expansion of the thesis done by Captain Gary B. Lawson (1989). It was designed to identify significant aspects of the combat experiences of Air Force Civil Engineering (AFCE) personnel in Vietnam and to add respondents to the database originated by Captain Lawson. Due to a lack of previous research on Air Force ground combat experiences, Captain Lawson's thesis and this thesis required the collection of original data. A 56-question structured interview, created by Captain Lawson, was used to interview 24 AFCE Vietnam veterans about their combat experiences. Research results describe the Vietnam combat experience as seen through the eyes of AFCE veterans. Tentative conclusions are offered on the problems encountered by AFCE personnel in Vietnam as well as how AFCE personnel could have been better prepared for the combat they experienced. The problems and the recommendations provided by the respondents are discussed in hopes that the Civil Engineering community can learn from the past via the experiences of personnel who worked and lived in a combat environment. This thesis was phase two of a program of research in the area of combat behavior and recommendations are made for research for phase three.

CIVIL ENGINEERING COMBAT EXPERIENCES DURING THE VIETNAM WAR:
PHASE II

I. Introduction

Overview

This chapter provides information on the background, the specific problem and purpose, the research objectives, the investigative questions, and the scope and limitations of this research.

Background

Justification for this Research. The most current source of extended combat experience for American military forces is the Vietnam War. Since the end of that war, the number of combat-experienced Air Force personnel has decreased significantly. Nonetheless, Air Force Civil Engineering personnel are expected to be ready to deploy, with little notice, worldwide in order to fulfill their wartime mission (Ellis, 1986:3). Today's Civil Engineering personnel are also expected to "be prepared to provide work site security or assist security forces with air base ground defense" (AFM 2-XZ, 1989:12). Therefore, Civil Engineering personnel must be properly trained and mentally prepared for direct combat duties anywhere in the world.

The Civil Engineering career field has little real-world experience to draw from to train and mentally prepare

its personnel for the combat duties they will encounter in future wars. As of 1988, three-quarters of all Civil Engineering officers had commission dates after 1972 (Torgerson, 1988:8). Many senior leaders in the Air Force are concerned about this situation (Cannan, 1988:2; McDaniel, 1987:15; Smith, 1987:9).

The Civil Engineering career field is not the only segment of the military which lacks information pertaining to combat experiences or, more accurately, combat behavior. According to Lt Col John A. Ballard, Ph.D., an Associate Professor of Management and Organizational Behavior at the Air Force Institute of Technology (AFIT):

While books by military historians and prior combatants fill many shelves, sociologists and psychologists (even military psychologists) have focused rarely on wartime behavior and behavior in combat. (Ballard, 1988:199)

History verifies that Civil Engineering personnel have not participated in direct combat the way Army Infantry and Marine Infantry personnel have. However, as was the case during the Vietnam War and due to the expected increase in attacks on air bases, Civil Engineering personnel will surely work, live, and be required to survive in a combat environment during future wars (Ballard and Wheeler, 1989:1; Hoey, 1984:33). The actions and reactions of Civil Engineering personnel in the combat environment they experienced during the Vietnam War can be classified as combat behavior.

Combat behavior refers to individual and group behavior occurring in a combat environment--an environment in which hostilities have occurred, are occurring, or in which individuals perceive hostilities are probable. (Ballard, 1988:200)

In addition to being able to accumulate real-world experiences to draw from to train and mentally prepare Civil Engineering personnel for the combat duties they will encounter in the next war, Lt Col Ballard offers four other grounds for studying combat behavior.

First, . . . is simply to advance our understanding of the human being. No portrait of the human condition would be complete if it excluded or failed to acknowledge combat behavior.

Second, the study of combat behavior provides unique opportunities 'to look behind closed doors', to explore areas of human behavior not often seen-or discussed.

Third, it is difficult to imagine a human activity with a more profound impact on individuals, groups, and nations than combat. Throughout history combat has determined the fate of people, governments, and nations.

Fourth, the knowledge obtained by studying combat behavior has application to military forces. It is the human element that is often most decisive in combat The potential of behavioral scientists to contribute to military force readiness through the study of combat behavior is considerable. (Ballard, 1988:200)

Hence, this research which attempted to learn more about combat behavior was necessary and fully justified.

Prior Research. The 1989 AFIT thesis by Captain Gary B. Lauson helped the Civil Engineering career field obtain relevant information regarding combat experiences of Civil Engineering personnel. Captain Lauson's thesis had two objectives:

(1) to identify significant aspects of combat experienced by Air Force Civil Engineering personnel in Vietnam; and (2) to identify questions which future research should consider in determining how to better prepare CE personnel for combat. (Lauson, 1989:5)

Captain Lauson interviewed 17 Civil Engineering personnel who had served in Vietnam in order to gather data for his thesis.

Specific Problem and Purpose

Lessons learned by Civil Engineering personnel who served in Vietnam must be recorded and analyzed for future use. The information gathered could ensure that involvement in future conflicts does not result in having to relearn previous lessons (Kishiyama, 1986:19). Knowledge given to Civil Engineering personnel today, to prepare them for the next war, could make them better prepared, more productive, and more capable of surviving in a combat environment tomorrow.

To gather lessons learned, Captain Lauson identified more than 50 volunteers who were willing to contribute information for his thesis. However, since he conducted personal interviews to obtain data (either in person or via telephone), Captain Lauson was able to interview only 17 volunteer respondents. The personal interviews proved to be time consuming; Captain Lauson ran out of time before he was able to contact all of the volunteers (Lauson, 1989:57). For this thesis, the researcher contacted the remaining volunteers whom Captain Lauson was unable to interview.

Captain Lauson interviewed approximately one-third of the volunteers; therefore, his conclusions may be suspect because of the small sample size in his thesis. This thesis gathered information from the remaining volunteers in order to complete the database. The advisor for this research, Captain Pedro J. Camejo, an Assistant Professor at AFIT's School of Civil Engineering and Services, considered it important to contact the remaining volunteers in order to ensure that all available and pertinent information was gathered regarding this issue. A greater representation of the population of Civil Engineering personnel who served in Vietnam was gained by gathering information from the volunteers whom Captain Lauson was unable to interview.

This thesis replicated and expanded the research done by Captain Lauson and gathered additional knowledge which can be used to prepare Civil Engineering personnel for their duties in the next war. The ultimate goal of this research was to acquire knowledge by documenting the lessons learned by Civil Engineering personnel who served in Vietnam.

Research Objectives

The database accumulated during this research was gathered so that it could be added to the database compiled by Captain Lauson and used in future research. A second reason for collecting the data was to determine if the conclusions made by Captain Lauson could be replicated and thus, verified in the present research. Therefore, this

thesis was a replication and expansion of Captain Lauson's thesis. Hence, this thesis had the same research objectives:

1. To identify significant aspects of combat experienced by Air Force Civil Engineering personnel in Vietnam.
2. To identify questions which future research should consider in determining how to better prepare CE personnel for combat.

Investigative Questions

To achieve its objectives, this thesis sought to answer three of the investigative questions posed in Captain Lauson's thesis. The fourth investigative question was added by this researcher.

1. What kinds of ground combat situations did Air Force Civil Engineering personnel encounter in Vietnam?
2. What major problems did Civil Engineering personnel encounter in the Vietnam combat zone?
3. During the Vietnam War, how could the Air Force have better prepared Civil Engineering personnel for combat?
4. What is the Civil Engineering community currently doing to prepare its personnel for the next war?

Scope and Limitations

Captain Lauson conducted an extensive and thorough literature review and concluded that no previous research had been done which addressed combat experiences of Civil Engineering personnel. Therefore, he reasoned that first-

hand information was required (Lauson, 1989:5). In an effort to increase the database pertaining to combat experiences of Civil Engineering personnel, 24 volunteers that were not contacted by Captain Lauson were interviewed as part of this thesis. All of the volunteers who were not interviewed by Captain Lauson were contacted, but only 24 of them had the appropriate experiences sought for this research. In addition, a literature review was conducted that extended the literature review done by Captain Lauson.

Both officer and enlisted personnel were interviewed to gather information for this thesis. All 24 of the interviewees were assigned to a Civil Engineering unit and all were exposed to enemy fire at least once. Furthermore, the time periods they served, the locations in Vietnam where they served, and the type of Civil Engineering unit they were assigned to were not limited in this thesis. Finally, the information provided by the respondents and this thesis contributed to the on-going research done by Lt Col John A. Ballard and Captain Jon A. Wheeler (Captain Lauson's thesis advisor). Both officers are faculty members at AFIT and are interested in research pertaining to combat behavior.

Conclusion

Civil Engineering personnel are required to be prepared to deploy worldwide, possibly into combat environments. The Civil Engineering career field has little real-world experience to draw from to train and to mentally prepare its

personnel for the duties they will encounter in a combat environment. Therefore, a need existed to document and analyze the experiences of Civil Engineering personnel who served in Vietnam.

Captain Lauson gathered relevant information regarding combat experiences of Civil Engineering personnel. However, since he interviewed only 17 respondents, Captain Lauson's thesis had to be expanded to include the volunteer respondents he was unable to interview. One goal of this research was to acquire knowledge, which is of value to the Civil Engineering career field, by analyzing the lessons learned of Civil Engineering personnel who served in Vietnam.

Thesis Organization

This chapter explained the need for gathering and analyzing combat experiences of Civil Engineering personnel who served in Vietnam. Chapter II reviews the literature on similar research already conducted and it also reviews other publications which relate to the issues studied in this thesis. The methodology used to conduct this research is explained in Chapter III. Chapter IV displays the results of the interviews. A discussion of the information in Chapters II and IV comprises Chapter V. Finally, Chapter VI bears the conclusions and recommendations of this thesis.

II. Literature Review

Overview

This chapter reports on the literature applicable to lessons learned about combat behavior and on the initiatives taken by the Civil Engineering career field to prepare its personnel for the next war. Specifically, this chapter looks at Captain Lauson's thesis, at a thesis by Captain Douglas Harris, and at two Air Force publications written specifically with Civil Engineering personnel in mind.

This chapter will not reexamine the same material summarized by Captain Lauson's literature review. Captain Lauson conducted a broad and thorough literature review; however, he did not include all of the research conducted because another thesis, dealing with combat behavior, was accomplished during the same time frame he did his research. Also, he did not include the Air Force publications included in this chapter.

This chapter has four sections. The first two sections discuss research endeavors conducted by Graduate Students at AFIT's School of Systems and Logistics (including Captain Lauson's thesis). Both theses studied at least one aspect of ground combat experienced by Air Force personnel in Vietnam. They also relate the knowledge obtained to today's Air Force personnel. The third and fourth sections address two Air Force publications which deal with Civil Engineering combat doctrine and the training Civil Engineering personnel

should receive to enable them to accomplish their wartime tasks.

Captain Lauson's Thesis

Several research projects have been conducted which deal with lessons learned by Civil Engineering personnel who served in Vietnam. However, Captain Lauson's thesis was the only research designed to collect data related to Civil Engineering personnel and combat behavior. Also, Captain Lauson examined the other Civil Engineering research undertakings in his literature review. Therefore, Captain Lauson's thesis is the only Civil Engineering study explored in this chapter.

Captain Lauson's thesis was titled "Civil Engineering Combat Experiences During the Vietnam War: An Exploratory Study". It was devised to report the

Vietnam combat experience in terms of factors identified by men who had served in Vietnam as well as major dimensions of combat behavior: leadership, cohesion[,] and combat motivation.
(Lauson, 1989:ii)

To gather data, he interviewed (either in person or via telephone) 17 men who were assigned to some sort of Civil Engineering unit and were exposed to hostile fire while they were in Vietnam.

In addition to conducting 17 interviews, Captain Lauson performed an extensive literature review to aid in the analysis of the data. First, he briefly outlined United States involvement in the Vietnam War. He discussed the

major incidents which occurred from the end of World War II to the fall of Saigon in 1975. Involvement by the United States in Vietnam started in 1950 in an advisory capacity. The first American combat troops were sent to Vietnam in 1965. Second, Captain Lauson characterized the missions, the problems, and the accomplishments of the three types of units which the majority of Civil Engineering personnel served in while they were in Vietnam: BCE (Base Civil Engineering) Squadrons, Prime BEEF (Base Engineer Emergency Force) teams, and RED HORSE (Rapid Engineer Deployable, Heavy Operational Repair Squadron Engineer) Squadrons. Third, he reported the "major dimensions of human behavior which leading authorities consider important to effectiveness in combat" (Lauson, 1989:28). The major dimensions of behavior in combat found in the literature by Captain Lauson were: (1) combat motivation (which includes primary groups, bonds with the military unit, ideology, discipline, voluntary compliance, self-preservation, and hate), (2) cohesion, (3) morale, and (4) leadership (Lauson, 1989:8-52).

Captain Lauson's thesis was an exploratory study. Therefore, the results he obtained were qualitative and somewhat subjective. Nonetheless, he was able to preserve some of the lessons learned from Civil Engineering personnel who experienced combat environments in Vietnam. Captain Lauson's thesis gathered information from the "men in the trenches" because the majority of the literature he found

was limited (Lauson, 1989:122). The literature he found that dealt with Civil Engineering experiences in Vietnam contained details from Civil Engineering personnel who were in command positions only; they were mostly concerned with accomplishments and technical issues (Lauson, 1989:122).

In accomplishing the first research objective, to distinguish notable facets of combat experienced by Air Force Civil Engineering personnel in Vietnam, Captain Lauson identified 13 such facets.

1. Combat experiences in BCE units were widely varied and appeared to depend on the location, time frame and the availability of combat troop support in Vietnam.
2. Junior officers in BCE units lacked essential combat engineering skills.
3. Some BCE personnel did succumb to psychiatric stress in Vietnam.
4. BCE personnel encountered problems that were totally different from problems that characterized U.S. bases.
5. BCE units experienced shortages in tools, heavy equipment and construction materials.
6. Having many different types of portable electric generators in Vietnam made adequate supplies of generator parts difficult to maintain.
7. Subordination of military craftsmen and NCOs to civilian supervisors degraded BCE supervisory and technical capabilities in Vietnam.
8. Personnel in BCE units were not . . . informed on the potential for enemy attack against the base, nor were they told how to respond to different attack scenarios.
9. In general, BCE and RED HORSE personnel appeared to have been uninformed about life in the combat zone.

10. In general, many BCE personnel felt unprepared for combat in Vietnam.

11. In both RED HORSE and BCE units, some Civil Engineering personnel directly participated in combat.

12. Cohesion and morale in RED HORSE units in general was excellent and appeared related to unit rotation/training.

13. Having BCE personnel trained in more than one skill would have been desirable. (Lauson, 1989:115-118)

In achieving the second research objective, namely to classify areas for future research to consider in determining how to prepare Civil Engineering personnel for combat, Captain Lauson listed 10 potential questions.

1. How has contingency training changed in Civil Engineering (CE) since the end of the Vietnam War?

2. What types of enemy ordinance are Air Force engineering personnel likely to encounter in future conflicts? Is CE being trained on how to deal with these weapons?.

3. Are junior officers in CE developing the skills they will need in war?

4. Do junior officers understand the tasks they will be expected to perform in combat?

5. Do NCOs understand the tasks they will be expected to perform in combat?

6. How will the Air Force deal with the problem of providing electrical power in future conflicts? Has the Air Force standardized its portable generators so as to facilitate supply of parts and to ensure the proper type of generator (emergency generators with high-speed engines versus generators designed to be sources of primary power) . . . is provided?

7. To what extent do AFCE personnel need to be able to work outside their own specialties? What specialties should be familiar with what other specialties?

8. What information does the Air Force plan to provide CE personnel about their mission before sending them into combat?

9. What information should the Air Force provide Civil Engineering personnel on what they can expect to encounter in combat (such as combat stress and psychiatric casualties)?

10. A larger sample of RED HORSE personnel is needed to determine how well prepared RED HORSE was for combat in Vietnam. There were too many confounds (such as personnel being rotated out of cycle into the unit) to reach even a tentative conclusion on the adequacy of preparation of RED HORSE units for combat. (Lauson, 1989:118-119)

Captain Lauson also distinguished three general areas of today's combat preparation of Civil Engineering personnel which he thought required review, attention, and improvement:

[First,] because it is Air Force policy for CE personnel to assist the Security Police in the defense of air installations, training in fire team tactics and in the use of weapons available to Security Police forces should be given to CE personnel.

Second, the Air Force should develop doctrine on the type of information its people should have before being sent into a combat area.

Third, . . . an evaluation is needed to determine if CE officers and NCOs are developing skills required to satisfactorily perform their combat engineering role. (Lauson, 1989:122-123)

Finally, based on the information gathered during the interviews, Captain Lauson derived a summary of the typical experiences of Civil Engineering personnel in the combat environment of Vietnam. This summary represented nearly every interview respondent's experiences. It was characterized by

tremendous workloads, constant stress, fatigue, material and equipment shortages, the demand for people who know their jobs inside and out, oppressive heat and humidity, as well as anxiety over when and where the enemy is likely to strike. (Lauson, 1989:121-122)

A Study of Leadership in Combat

The second thesis reviewed was conducted by Captain Douglas A. Harris in 1989 and is titled "Leadership Behaviors During Air Base Attack: Perceptions of Air Force Enlisted Personnel Who Came Under Fire in Vietnam". Captain Harris performed an exploratory thesis also; his scope, however, was not as broad as Captain Lauson's. Captain Harris focused solely on the leadership aspect of combat. His conclusions are based on qualitative data and may be somewhat subjective.

Captain Harris studied the connection between leadership under fire (combat leadership) and the behavior of men in the combat environment. To do so, he researched contemporary Air Force leadership policies and contrasted them with perceptions of effective leadership. Captain Harris also reported the leadership characteristics thought to be necessary during combat by men who experienced air base attacks. He obtained perceptions of effective leadership by interviewing 24 individuals who were enlisted and were under hostile fire in Vietnam. He did not interview personnel from a single career field; the 24 respondents represented 10 different career fields (Harris, 1989:ii,4,42).

Captain Harris concentrated his literature review in the area of leadership by examining civilian and Air Force publications. Specifically, he scrutinized civilian publications which addressed (1) the nature of military leadership, (2) the on-going debate regarding leadership versus management, (3) the distinguishing features of leadership during times of peace, and (4) the distinguishing features of leadership during times of war. He further inspected Air Force publications to determine the Air Force's definition of leadership and the Air Force's notion of desirable leadership traits and principles. Finally, Captain Harris reviewed literature, some based on empirical data, which discussed leadership in combat.

Based on the literature review and the interviews conducted, Captain Harris made several interesting conclusions. He stated that Air Force personnel (officers and enlisted personnel) are not adequately trained to be ground combat leaders.

Even pilots who were acknowledged . . . as excellent in air combat were noted as behaving very differently on the ground when they came under fire. Some pilots became more shook up and experienced more difficulty when under fire on the ground. . . . [T]he bottomline is that in order for leaders to exhibit traits of confidence, cool headed[ness], knowing what to do, and decisiveness in a situation of coming under fire, they have to have been trained in what to expect and what to do. . . . According to respondents, . . . there is a clear deficiency in this area for most of the Air Force. (Harris, 1989:96-97)

Captain Harris also concluded that the leadership traits thought by the respondents to be important for combat

leaders "was not contradictory" to the traits described in Air Force publications (Harris, 1989:99). However, he did distinguish that the respondents considered certain traits to be more important "during the stress of coming under fire" (Harris, 1989:99). Air Force publications made no such distinction. "The more dominant traits were cool head[edness], initiative, knowledge of what to do, experience, and training" (Harris, 1989:100). The respondents thought that "knowing what to do" would increase a leader's courage. They also thought that

training in combat defense tactics and the weaponry to be encountered . . . [would be] the best way to instill the knowledge which would ultimately provide a confident foundation for courage. (Harris, 1989:100)

Captain Harris capsulized his final thoughts and conclusions as,

If the Air Force [installation] is to be as Winston Churchill said 'a stronghold of air-groundsmen' and support the mission of 'to fly and fight', then there may be a need to rethink leadership development for combat. (Harris, 1989:111)

Civil Engineering Combat Support Doctrine

Air Force Manual (AFM) 2-XZ, Volume 1, "Civil Engineering Combat Support Doctrine", written specifically for Civil Engineering personnel, is the first Air Force publication reviewed in this chapter. The manual was designated "XZ" because it was not finalized when this literature review was conducted. As previously mentioned.

AFM 2-XZ was written specifically to aid Civil Engineering personnel. It

is intended to guide the organizing, equipping, training, sustainment, deployment, and employment of engineer forces in support of Air Force combat operations. It is derived from the study of war and other contingency operations. (AFM 2-XZ, 1989:ii)

Furthermore, AFM 2-XZ

establishes doctrine for the engineering combat support of aerospace forces and represents the official views of the United States Air Force. It reinforces Basic Aerospace Doctrine (AFM 1-1) and Combat Support Doctrine (AFM 1-10). This manual describes the precepts for Air Force leaders and engineers. (AFM 2-XZ, 1989:iii)

Careful examination of AFM 2-XZ shows that it is an important document for two major reasons. First, it gives guidance to those responsible for planning Civil Engineering activities and it gives guidance to those responsible for training Civil Engineering personnel for operations in contingency environments. Second, it shows how important Civil Engineering skills are to the projection and sustainment of airpower.

The manual, however, falls short of being specific enough to encourage or require training which addresses combat behavior. The manual focuses most of its attention on facilities, rather than on personnel. For example, in one instance, while explaining the importance of proper acquisitions, the manual states,

[Acquisition] encompasses research and development, land acquisition, and design and construction of facilities capable of performing

effectively in the expected combat environment.
(AFM 2-XZ, 1989:5)

Numerous comments are made about the things that will be needed to ensure "facilities [are] capable of performing effectively in the expected combat environment". However, no remarks are made that directly pertain to preparations necessary to ensure that personnel are capable of performing effectively in the expected combat environment.

Some comments found in the manual can be interpreted as encouraging training in the combat behavior area. For example, it states that Civil Engineering personnel must "be prepared to provide work site security or assist security forces with air base ground defense" (AFM 2-XZ, 1989:12). Furthermore, it declares that the Air Force must

Train military engineers as they intend to fight. Training must be realistic, stressful, relevant, evaluated, and of sufficient duration to physically and mentally prepare the military engineer for the rigors of contingencies and combat. (AFM 2-XZ, 1989:20)

Because the manual refers to the training as being of "sufficient duration to physically and mentally prepare", it can be inferred that the types of training referred to above are exercises and deployments.

Hence, no specific comments are made which encourage or mandate training in the area of combat behavior. The closest connection can only be interpreted as existing. But, since the manual tasks all Major Commands to "develop derivative manuals that adapt engineering doctrine" to them (the Major Commands), the manual can be interpreted in a way

deemed most appropriate by the Major Commands (AFM 2-XZ, 1989:iii). Those Major Commands who recognize the importance of training which specifically addresses combat behavior can interpret the manual as requiring such training. The last two lines of "An Engineer's Creed" which prefaces the manual best illustrates a passage which lends itself to such an interpretation. It reads,

I am forever ready to fulfill my mission worldwide and under any conditions. I prepare for my wartime mission during peace for I know the bases and people I have today are what I must fight with tomorrow. (AFM 2-XZ, 1989:i)

Prime BEEF Wartime Task Standard

The Prime BEEF (PB) Wartime Task Standard (WTS) is the second Air Force publication, written specifically for Civil Engineering personnel, reviewed in this chapter. The WTS is applicable to all Civil Engineering personnel, not just those who are assigned to Prime BEEF teams. All Civil Engineering personnel, even those in RED HORSE Squadrons, may sometime during their careers be assigned to a Prime BEEF team. Therefore, the WTS is relevant to all Civil Engineering personnel.

The purpose of the WTS is to list the

basic wartime skills, knowledge, and the more common of the major wartime tasks necessary for Prime BEEF combat support (CS) squadrons and teams to perform their wartime duties in a timely fashion. (AFESC, 1989:1)

The WTS is divided into eight categories. The first category is Basic Wartime Knowledge and Skills. This

category is separated into 17 subsections. They are (AFESC, 1989:2-9):

1. Prime BEEF Orientation
2. Field Sanitation and Hygiene
3. Self-Protection From Extreme Weather
4. First Aid Techniques
5. Physical Fitness
6. Personal/Work Party Security
7. Convoy Security
8. Air Base Ground Defense Interface
9. Vehicle Qualifications
10. Construction Management
11. Rapid Runway Repair
12. Contingency/Wartime Dual Skill Requirements
13. Auxiliary Structural Fire Fighting Skills
14. Command and Control
15. Base Denial
16. Passive Defense
17. Supply Support

The second category is Expedient Repair and Destruction. This category is divided into seven subsections. They are (AFESC, 1989:9-14):

1. Rapid Runway Repair
2. Explosive Ordnance Reconnaissance
3. Air Base Damage Assessment
4. Utility Repair
5. Facility Repair

6. Destruction and Debris Removal
7. Base Denial

The third category is Expedient Field Construction. This category is separated into nine subsections. They are (AFESC, 1989:14-16):

1. Field Latrines
2. Grease Trap
3. Waste Water Disposal
4. Solid Waste Disposal
5. Berms and Dikes
6. Site Layout
7. Site Preparation
8. Mortuary Support
9. Roadworks

The fourth category is Expedient Beddown Methods. This category is divided into six subsections. They are (AFESC, 1989:16-19):

1. Harvest Eagle (HE) Type Assets
2. Harvest Falcon (HF) Type Assets
3. Harvest Bare (HB) Type Assets
4. Airfield/NAVAID Support
5. Medical Support
6. Miscellaneous Support

The fifth category is Passive Defense Measures. This category is separated into four subsections. They are (AFESC, 1989:19-22):

1. Hardening

2. Chemical Warfare (CW) Protection
3. CW Defense Task Qualifications
4. Camouflage, Concealment and Deception (CCD)

The sixth category is Survivability Support. This category is divided into four subsections. They are (AFESC, 1989:23):

1. Water Supply
2. Fighting/Protective Positions
3. Obstacles
4. Resource Dispersal

The seventh category is Crash Rescue/Fire Protection. This category is separated into five subsections. They are (AFESC, 1989:24-25):

1. Aircraft Fire Suppression and Aircrew Extraction
2. Structural and Vehicle Fire Suppression
3. Search and Rescue
4. Miscellaneous
5. Auxiliary Structural Fire Fighting

The final category is Mobilization. This category is divided into three subsections. They are (AFESC, 1989:25):

1. Personnel Recall (Active Duty)
2. Personnel Recall (Reserve Forces)
3. Transportation

The WTS goes into great detail, within each subsection of each category, to list specific tasks and requirements. However, as with AFM 2-XZ, interpretation must be used to find an item which demands training in combat behavior.

areas. For example, under the Basic Wartime Knowledge and Skills category, the WTS states that all Civil Engineering personnel must "know Civil Engineering doctrine" (AFESC, 1989:2). This line item does not explicitly mention combat behavior training for Civil Engineering personnel. If the intent is there, it is not obvious and must be interpreted. In order for an individual reading the WTS to interpret it as requiring training in combat behavior, the individual must first interpret AFM 2-XZ as requiring training in combat behavior.

Summary

This chapter reported on the literature applicable to lessons learned about combat behavior and reported on two publications written by the Civil Engineering career field to help prepare its personnel for the next war. The information summarized in this chapter was used, with the data gathered during the experience interviews (discussed in Chapter III), to answer the investigative questions for this research.

III. Methodology

Overview

This chapter describes the research method used to achieve the research objectives and to answer the investigative questions proposed in Chapter I. In answering the investigative questions, the research objectives were achieved.

The first section discusses why the researcher chose to use the structured interview used by Captain Lauson. The second section examines the similarities between the structured interview and the experience survey; the second section goes on to discuss the experience survey in detail. The procedure used to identify the volunteer respondents is described in the third section. The fourth section addresses the questioning of the volunteers. A discussion of how the interviews were conducted is in the fifth section. The sixth section demonstrates the minor changes made to Captain Lauson's interview questions. The content analysis used to examine the data is explained in section seven. The eighth section discusses the purpose of the research method.

Method Justification and Background

As part of his research, Captain Lauson conducted a thorough literature review; he attempted to find "primary and secondary sources in the areas of Air Force ground

combat experiences and Air Force combat behavior" (Lauson, 1989:53). Captain Lauson used several locations and several services while conducting his probe for sources of prior research in this area. These sources were the Air Force Institute of Technology (AFIT) School of Systems and Logistics libraries at Wright-Patterson Air Force Base, Ohio; the Simpson Historical Research Center at Maxwell Air Force Base, Alabama; the Air University Library at Maxwell Air Force Base, Alabama; the Wright State University Library, Dayton, Ohio; and specific topical searches through the on-line computer database services of the Defense Technical Information Center (DTIC) and the DIALOG Information Retrieval Service available through the AFIT library (Lauson, 1989:53).

Captain Lauson found numerous reports, books, and articles which examined and described Army and Marine Corps experiences in ground combat. He did not unearth sources which addressed Air Force ground combat experiences. Therefore, Captain Lauson concluded that he should collect first-hand data for his thesis (Lauson, 1989:53).

Captain Lauson used interviews to gather data for his thesis, either in person or via telephone. Due to the time required to conduct the interviews, Captain Lauson was able to interview only 17 of more than 50 volunteer respondents (Lauson, 1989:7). To enlarge the database of first-hand information, the structured interview created and validated by Captain Lauson was used to collect information for this

thesis (Appendix A). This researcher contacted the remaining volunteers and conducted additional interviews using, with minimal changes, the same structured interview that Captain Lauson used.

Simply stated, this research was done because Captain Lauson was not able to interview all of the volunteers who contacted him while he was doing his research. If Captain Lauson's database had not been so small (17), the justification for conducting this research, using the same structured interview, would have been weak. Therefore, an objective of this research was to collect data compatible with Captain Lauson's database so that his database and the database from this research could be easily combined in future research. In doing so, 24 additional volunteers were contacted and interviewed. Thus, for the two databases to be compatible, it was essential that this research be conducted by using the same structured interview that Captain Lauson created and used.

Captain Lauson used a structured interview which contained 56 questions. The structured interview used by Captain Lauson was derived from a structured interview developed by Major Antone Gajeski and Lt Col John A. Ballard (Lauson, 1989:59). As part of the thesis he conducted while he was a student at AFIT, Major Gajeski used his structured interview to gather data which pertained to the experiences of combat aircrews during the Vietnam War (Gajeski, 1989:24). Lt Col Ballard also took part in Captain Lauson's

adaptation of Major Gajeski's structured interview and agreed that Captain Lauson's structured interview could be effectively used in this research. Therefore, to obtain first-hand information related to experiences of Civil Engineering personnel during the Vietnam War and to collect additional information that was compatible to Captain Lauson's database, the researcher used Captain Lauson's structured interview, with some modifications (Appendix A). The changes made to Captain Lauson's structured interview will be explained in detail in a later section of this chapter.

The Experience Survey (Structured Interview)

The only distinction between the terms is that the experience survey collects information pertaining to a respondent's experiences while a structured interview collects information which may or may not pertain to a respondent's experiences. The intention of the structured interview was to obtain information relating to the respondents' experiences. Therefore, the structured interview used to gather data was also considered to be an experience survey. For the purposes of this research, the two terms were considered to be synonymous. Also, Captain Lauson had an identical situation; he used the terms "experience interview" and "structured interview" interchangeably in his thesis (Lauson, 1989:55).

The experience survey is used when the purpose of the research is "to gain familiarity with a phenomenon or to achieve new insights into it, often in order to formulate a more precise research problem or to develop hypotheses" (Selitz and others, 1964:50). Research endeavors which use the experience survey method are generally called "formulative or exploratory studies--the major emphasis is on discovery of ideas and insights" (Selitz and others, 1964:50). In other words, the experience survey is "a survey of people who have had practical experience with the problem to be studied" (Selitz and others, 1964:53).

People gain experience and become known as experts by being somewhere at the right time, by being a survivor of some sort of traumatic or deadly event, by outlasting peers in a particular environment, or by being the best person on the job. An infinite number of ways to acquire experience and thus become known as a specialist exists.

Such specialists acquire, in the routine of their work, a reservoir of experience that could be of tremendous value in helping the social scientist to become aware of the important influences operating in any situation he may be called upon to study. It is the purpose of an experience survey to gather and synthesize such experience. (Selitz and others, 1964:55)

The experience survey was well suited to be the research method used in this thesis for five major reasons.

1. The experience survey allowed the researcher to acquire primary source data (Emory, 1965:157).

2. The experience survey was a good foundation for hypotheses.
3. The experience survey contributed information about the possibilities for doing diverse types of research.
4. The experience survey furnished opinions of the problems deemed urgent by the people interviewed.
5. The experience survey supplied a summary of the knowledge of skilled personnel about the usefulness of various methods and procedures in attaining goals (Sellitt and others, 1964:59).

Despite the five major justifications for using the experience survey listed above, it had three disadvantages which were considered and taken into account.

1. The experience survey may yield inaccurate and biased responses if the questions are worded incorrectly.
2. The responses to an experience survey are susceptible to being misinterpreted by the researcher (Gajeski, 1988:2).
3. For this particular research, the respondents were required to supply information based on events that occurred, in some cases, as much as 25 years ago. This could result in memory "distortion, selective retention" and selective reporting (Gajeski, 1988:3).

Memory distortion, selective retention and selective reporting can be disadvantages of the experience survey for three reasons.

1. The experience survey relied upon the respondent's willingness to report and the respondent's capability to report factually.
2. The experience survey could be swayed by anxieties and other factors affecting the respondent.
3. The experience survey could be prejudiced by the emotions of the respondent because, to some degree, any respondent will color and misrepresent the facts, either consciously or unconsciously (Rummel and Ballaine, 1963:105).

As Captain Lauson did in his thesis, the researcher ensured that the research method used in this thesis had four characteristics which minimized the effects of the disadvantages listed above.

1. The experience survey incorporated the use of controlled wording in the questions and purposeful question sequencing to obtain accurate information.
2. The experience survey had clear, simple, and limited questions to aid in the elimination of misinterpretation during the analysis phase (Gajeski, 1988:22).
3. The validity of the answers to the questions were assessed by comparing answers among the respondents and by comparing the answers to the available literature (Lauson, 1969:56).
4. It was the opinion of the thesis reader, Lt Col Ballard, whose background is in social psychology, that valid data on behavior in combat can be collected with a proper interview and a recognition of data

limitations. It is the intense and unique nature of combat that makes possible a valid recall of these experiences. (Lauson, 1989:57)

Selection of Respondents

To contact possible respondents, Lt Col Ballard and Captain Wheeler placed an advertisement in the "After Burner", an Air Force retirees newsletter, requesting that veterans who served in Vietnam, and in particular, in a Civil Engineering unit volunteer to be interviewed. They received approximately 50 responses from Civil Engineering personnel who had been in South East Asia (SEA). Captain Lauson interviewed 17 of those volunteer respondents. This researcher obtained the list of names and phone numbers of the volunteers who Captain Lauson was unable to interview. Then, each volunteer was contacted to determine which volunteers met the requirements to be interviewed as part of this research.

The researcher contacted 35 volunteers who were not interviewed by Captain Lauson. All 24 of the volunteers who responded to the interview questions for this research were contacted at least twice. During the first conversation, the researcher determined if the volunteer was competent and if he had relevant experience by asking the volunteer if he had served in a Civil Engineering unit and had been exposed to hostile fire. If the reply to either question was negative, the researcher thanked the person for volunteering to help with the research and informed him that his

experience was not appropriate for this thesis. If the reply to both questions was positive, an appointment for conducting the interview was made. The researcher then called the volunteer at the agreed upon time and interviewed the respondent.

Only 24 of the 35 volunteers contacted were interviewed. Nine of the volunteers were either not in a Civil Engineering unit while in Vietnam or did not experience hostile fire. Thus, the researcher determined that these volunteers did not have relevant experience. Two of the volunteers who were considered appropriate for this thesis were not available for the interview. After these volunteers failed to meet several appointments, the researcher decided to exclude them from the study. For this thesis, the research population was Civil Engineering personnel who served in Vietnam and experienced hostile fire. A volunteer who satisfied both of these requirements was considered to be competent and was considered to have relevant experience.

In selecting respondents, the literature suggested that it is . . . important to select respondents so as to ensure a representation of different types of experience. Wherever there is reason to believe that different vantage points may influence the content of observation, an effort must be made to include variation in point of view and in type of experience. (Selltiz and others, 1964:56)

In keeping with this sentiment, the 24 respondents served in Vietnam in several different capacities. Prime BEEF (Base Engineer Emergency Force) teams, RED HORSE (Rapid Engineer

Deployable, Heavy Operational Repair Squadron, Engineer) Squadrons, and regular BCE (Base Civil Engineering) Squadrons were the three types of units that saw the majority of Civil Engineering personnel (Appendix B). However, there were still other activities that Civil Engineering personnel served in while they were in Vietnam.

The researcher interviewed personnel from the three types of units listed above. Two volunteers served on a Prime BEEF team. Two volunteers served as firefighters; they were assigned to regular BCE Squadrons, but they merit distinction because firefighting duties are not similar to the duties of other BCE Squadron jobs. Nine volunteers served in regular BCE Squadrons (11 were in BCE Squadrons when the two firefighters are counted). Nine volunteers served in RED HORSE Squadrons. In addition, one volunteer served on the 7th Air Force staff. The final volunteer served as an instructor in the Vietnamization Program. The researcher did not exclude the last two volunteers because they served in functions which the Civil Engineering community will probably have facsimiles for during the next war and because they each experienced hostile fire. Therefore, they were considered to be competent and their experiences were considered to be relevant.

The 24 volunteers differed in several other ways. Four volunteers were officers (including one Warrant Officer) and 20 volunteers were enlisted personnel. The years of service in Vietnam represented by the 24 volunteers ranged from 1961

to 1971 (the year they started their tour). Finally, the 24 respondents served at eight different locations while they were in Vietnam. The common bond among the 24 volunteers remained; they all worked in a Civil Engineering unit and they all experienced hostile fire while they were in Vietnam.

The Questioning of Respondents

The respondents' initial survey should be unstructured in order "to have some preliminary ideas of the important issues in the area" (Selltiz and others, 1964:56). This suggests that at least one additional survey is needed, one that is somewhat structured, to obtain all of the information available from the respondents. However, the literature recommends that the follow-up survey "maintain a considerable degree of flexibility" (Selltiz and others, 1964:57). The literature dispels any confusion on this point by saying,

The purpose of providing the interview with structure is to ensure that all people interviewed respond to the questions the researcher wishes to have answered; however, the formulative and discovery functions of the experience survey require that the interview always allow the respondent to raise issues and questions the investigator has not previously considered. (Selltiz and others, 1964:57)

As mentioned earlier, all 24 of the respondents were contacted at least twice. The first conversation was used to determine if the volunteer possessed the experience sought for this research. The first conversation was also

unstructured. Therefore, it provided the preliminary ideas on important issues that were discussed during the interview which was conducted at a later date. Also, the final interview contained some flexibility.

The experience survey used to gather data in this thesis originated as a structured interview in the thesis conducted by Major Gajeski in 1988. Major Gajeski was guided by Lt Col Ballard as the structured interview was created. Also, Captain Lauson was counseled by Lt Col Ballard and Captain Wheeler (Captain Lauson's thesis advisor) as he modified Major Gajeski's structured interview so that it would be practical in the Civil Engineering arena (Lauson, 1989:59).

This researcher used this survey and also allowed all respondents to raise issues and questions that had not been previously considered by using open-ended questions and by asking each respondent, towards the end of each interview, if they thought any other topics should be discussed during future interviews. These provisions provided flexibility to the interview. By using open-ended questions, the respondents felt free to express their thoughts in a way that seemed logical to them. Also, those respondents who thought additional topics should be discussed during future interviews elaborated on the topics they suggested by telling the researcher what they thought about that suggested topic.

Finally, the literature suggested that the respondents should exhibit good communicative skills. The researcher knew of no way, prior to the interview, to assess the respondents' communicative skills. Also, the researcher did not want to discard any volunteers based on their communicative skills. Thus, to ensure that the respondents were given every opportunity to communicate their thoughts and to obtain accurate information, the researcher ensured that the interview included the use of restricted wording in the questions and intentional question sequencing. Also, the interview had clear, simple, and limited questions to assist in the deletion of misinterpretations. Some of the questions that Captain Lauson used were slightly reworded to obtain this goal.

Conducting the Interviews

The literature recommended the researcher brief each volunteer on the interview purpose and on how the information would be used before conducting an interview. The researcher did so and attempted to make the interview a pleasant and satisfying experience. If the respondent had these feelings, he would be more apt to cooperate in the interview. Also, the researcher sought to encourage cooperation by making the respondents think the interview was important and worthwhile (Emory, 1985:162).

The interview questions were read directly from the questionnaire to all of the respondents. To obtain accurate

answers, other techniques were also used. These techniques, recommended by the literature, were question repetition, nondirective clarification, and nondirective probing. A major objective during the interviews was to interact with the respondents in a way that did not imply that a question had a correct answer (Emory, 1985:164,166). Thus, the respondents were allowed to respond to the questions in the manner they thought to be appropriate.

None of the volunteers were close enough to the Dayton Ohio area to allow personal interviews. Therefore, all 24 interviews were done via the telephone. Since all of the interviews were done by telephone and not through the mail, the researcher was able to further explain any questions the respondents did not understand or any questions the respondents did not reply to properly.

All of the respondents gave their permission for the interviews to be tape recorded. The use of a tape recorder was important because it freed the researcher from taking notes and allowed full concentration on what was being said. The recording also provided a permanent, easily storable, verbatim record which later permitted accurate analysis of the responses.

Changes Made to the Interview Questions

In his thesis, Captain Lauson recommended 10 questions in his structured interview be changed "to improve the quality of information obtained through the interviews and

to make comparison of responses easier" (Lauson, 1989:120). After reviewing the suggested changes and after receiving guidance from the advisor and the reader, the researcher decided to incorporate only two of the recommendations made by Captain Lauson. Two questions were reworded and the remainder of the questions were unchanged.

The researcher concluded that inclusion of the other eight recommended changes would have substantially altered the meaning of the affected questions. Thus, the interview questions used by Captain Lauson and the interview questions used in this research would not have been essentially identical. Since one of the objectives of this research was to ensure that the database was compatible with Captain Lauson's database, no suggestion that would substantially alter the meaning of any question could be tolerated.

The changes made to the two questions are explained below. In Captain Lauson's structured interview, question number 11 read,

I'd like to get an idea of the type of unit you were assigned to.

- a. In general, what was its mission?
- b. How large was it?
- c. How was it organized? (Lauson, 1989:124)

Captain Lauson thought part b was "too vague" and he recommended:

Be specific about the type of information sought through this question. For the Civil Engineering interviews, it would have been better to have asked 'About how many people were assigned?' (Lauson, 1989:120)

Captain Lauson's recommendation was incorporated and part b was changed to read, "How large was it, about how many people were assigned?" The researcher, the advisor, and the reader considered this version of the question to be essentially identical to the version used by Captain Lauson, but more explicit.

In Captain Lauson's structured interview, question number 30 read,

Were there other groups that guys hung out with?

Yes - How were they associated?

Captain Lauson thought,

'How were they associated?' is too stilted a question for purposes of this interview. Recommend asking 'What kind of groups were they?' or 'Why do you think they chose to hang out with those groups?' (Lauson, 1989:120)

Captain Lauson's assessment was regarded as accurate and the "Yes" part of the question was changed to read, "What was the common bond?" Once again, the researcher, the advisor, and the reader considered this version of the question to be essentially identical to the version used by Captain Lauson, but more precise.

Content Analysis

Data received from the experience survey was analyzed qualitatively for content. Since this thesis was a replication and extension of the research done by Captain Lauson, the 12 categories of information he chose for

content analysis were used (Appendices D through O). The 12 categories of information used for content analysis were:

1. Return of Hostile Fire
2. Bonding With The Unit
3. Quality of Unit Leadership
4. Traits of Effective Combat Leaders
5. Comparison of Unit Cohesion and Leadership
6. Helpful Factors In The Combat Zone
7. Perception of Biggest Problem
8. Recommendations for Combat Preparation
9. Desired Training
10. Initial Reaction to Hostile Fire
11. Training and Perceptions of Preparedness
12. Eoredom and Leave (Lauson, 1989:131-152)

Purpose for Methodology

The information acquired via the experience survey, once analyzed, was used to determine if any of the experiences of the Civil Engineering personnel interviewed could be classified as lessons learned and could be of value to the Civil Engineering career field. More specifically, lessons learned were sought which could be of use to mentally prepare and to train Civil Engineering personnel for future wars. Hopefully, in future research endeavors, the information will be used to compare today's methods to the experiences and recommendations of Civil Engineering personnel who dealt with an actual combat environment.

Careful consideration was taken while collecting the data so that it would be compatible with the data collected by Captain Lauson. The data collected in this thesis can now be combined with the data collected by Captain Lauson. Therefore, analysis of the combined database can be performed during future research ventures.

IV. Results

Overview

This chapter summarizes and categorizes the comments provided by the 24 respondents during the structured interviews described in Chapter III. The statements recounted in this chapter, combined with the information from the literature review, will be used in Chapter V to answer the investigative questions posed in Chapter I.

This research is a replication and expansion of the thesis done by Captain Lauson; therefore, the categories of information he addressed are also discussed in this chapter. The following 12 categories of information are examined in this chapter.

1. Description of Participants
2. Description of Enemy Attacks
3. Return of Fire
4. Description of Bonds With the Unit
5. Evaluation of Unit Leadership
6. Description of an Effective Combat Leader
7. Morale Factors
8. The Biggest Problem Faced in the Combat Zone
9. Recommendations for Combat Preparation
10. Desired Training
11. Initial Reaction to Hostile Fire
12. Training and Perceptions of Preparedness

The selection of these 12 categories was based on an "evaluation of areas with the most potential for providing meaningful insight into what the Vietnam combat experience was like for Civil Engineering personnel" (Lauson, 1989:63).

As stated in Chapter III, Civil Engineering personnel who served in Vietnam and experienced hostile fire were interviewed via telephone using the interview questionnaire in Appendix A. Some of the information provided by the 24 respondents during the interviews are shown in Appendices B through O; the appendices are sorted by respondent to simplify their use. Because the interview questions were open-ended and were not designed to obtain specific ratings (such as fair or excellent), the researcher considered the respondent's tone of voice in addition to the answer when the responses were categorized.

Generalizations about the experiences of personnel based on the type of unit assigned to, rank, age, job, location, or year arrived in Vietnam were not be made because an insufficient number of respondents from each category were interviewed to make those types of generalizations with confidence. However, the 24 respondents were an adequate number of respondents to make preliminary generalizations about the experiences of Civil Engineering personnel, as a career field, which is appropriate for exploratory and qualitative research. Also, points are made with regard to one or more of the categories

listed above in a few instances where the data clearly showed a trend.

The Participants

A total of 24 men who were assigned to Civil Engineering units and were exposed to enemy fire were interviewed during this research. Appendix B provides information relevant to the respondents during the time they served in Vietnam which pertains to (1) the type of unit assigned to, (2) rank, (3) age, (4) job, (5) the installation assigned to, (6) the month and year arrived in Vietnam, and (7) volunteer status for duty in Vietnam.

1. Eleven of the respondents were assigned to BCE (Base Civil Engineering) Squadrons; nine were assigned to RED HORSE (Rapid Engineer Deployable, Heavy Operational Repair Squadron, Engineer) Squadrons; two were on Prime BEEF (Base Engineer Emergency Force) teams; one was part of the 7th Air Force staff; one was part of the Vietnamization Program.
2. The respondents' ranks while in Vietnam ranged from Airman Second Class (A2C) to Major. The rank that occurred most often was Staff Sergeant (there were seven) and four of the respondents were officers (including one Warrant Officer).
3. Ages of the respondents ranged from 19 to 41; the age that occurred most often was 19 (there were three).
4. The jobs listed are still performed in Civil Engineering units; the job that occurred most often was Equipment

Operator (there were four). The jobs performed by respondents 23 and 24 are worthy of being highlighted, despite the fact that they were not assigned to "traditional" Civil Engineering units. Respondent 23 was assigned to the 7th Air Force Headquarters. He worked in the Improvement and Modernization Program which was tasked to train Vietnamese people to maintain their bases so that American forces could be withdrawn. Respondent 24 was an instructor in the Vietnamization Program which was also tasked to train Vietnamese people to maintain their bases. Later in his tour, respondent 24 became an inspector. The jobs performed by these two respondents are notable because they do not represent usual Civil Engineering positions. It is reasonable to assume, however, that these types of jobs will be performed during future wars.

5. The respondents were assigned to eight different bases. The location that occurred most often was Ton Son Nhut; five respondents were assigned there. The term, "main location", was used to denote where the respondents were assigned; however, many travelled while they performed their jobs (convoys) and while they were off duty. Therefore, the experiences described by some of the respondents did not occur at the location cited as their "main location."

6. The years of arrival for the respondents ranged from 1964 to 1971; the year that saw the most arrivals was 1968 (there were six).

7. Eleven said they volunteered for duty in Vietnam and 13 said they did not volunteer. Ten of the 11 who volunteered offered patriotism or feelings of duty as the reason for volunteering. The eleventh person said he wanted to go because his brother had been there and he felt that he should go also. Of the 13 respondents who did not volunteer, seven said they expected to be selected eventually or that it was part of their job. Six of the 13 non-volunteers said they were apprehensive or they did not like the idea of being sent.

The following items are responses to question 1, "Why did you join the Air Force?" These answers are not paraphrased in an appendix. The summarized responses are given now to provide the reader with a better familiarization of the respondents. The respondents' answers fell into five classifications:

1. Three cited patriotic reasons.
2. Eight stated a desire to improve their situation either through learning a trade or getting an opportunity to leave their home towns.
3. Six said they either had a prior association with the military through relatives or they just wanted to serve in the military.
4. Five indicated a wish to avoid the draft or being recalled into another branch of service.
5. Two expressed a yearning to fly.

Description of Enemy Attacks

The respondents reported experiencing attacks which included only one of the following or a mix of the following: rockets, mortars, small arms, grenades, snipers, base infiltrators, and a large mass of troops trying to overrun the base. Mortars, rockets, and small arms were the responses given most often. Most of the convoy attacks were done with small arms, but two respondents reported that rockets and mortars were used against them during some of the convoy attacks they experienced.

Appendix C shows the information regarding frequency of attacks, length of attacks, and the kind of damage resultant from attacks. When the respondents were asked how often they were exposed to enemy fire, their answers were greatly varied. Some replied with (1) a number, (2) an estimation per some time frame, or (3) a qualitative answer.

1. Nine gave a number; the range was from one time to 15 times; six times was the answer provided most often (given three times).
2. Ten provided an estimate based on a time frame; the range was from "sometimes three times per day" to "at least once a month"; the answers "three times per week" and "once a week" were given most often (each was given three times).
3. Five gave qualitative answers that were: "often", "pretty regular", "periodically", "several times", and "not too much."

When asked how long the attacks lasted, the respondents' answers were again greatly varied. Answers ranged from 15 to 30 seconds to two hours, and were categorized into five sections.

1. One reported that attacks lasted 15 to 30 seconds.
2. Three claimed that attacks lasted 5 to 10 minutes.
3. Ten said attacks lasted 5 to 30 minutes.
4. Three described attacks to be 30 to 45 minutes long.
5. Seven responses were less exact and ranged from "a couple of minutes" to "sometimes all night."

In describing the type and amount of damage caused by the attacks, 13 respondents classified the damage as significant and 11 categorized the damage as minimal or minor. The descriptions of damage in the most severe category included: aircraft destroyed (C-130s, F-4s, and helicopters), facilities destroyed or seriously damaged (hospital, air traffic control tower, latrine, barracks, and offices), equipment destroyed or put out of commission (fire trucks, earth movers, and 18-wheelers), and large holes in the runway. The descriptions of damage in the less severe grouping included: small holes in the runway, holes in tents, and damage to facilities (bunkers, passenger terminal, and barracks).

Return of Fire

Appendix D paraphrases the answers to the two questions pertaining to return of hostile fire (Were you able to

return fire? and Did anybody return fire?). The responses were sorted into three categories: (1) those who returned fire, (2) those who did not return fire, but had base defense provided by someone else (Security Police, Army, Korean Army, or Marines), and (3) those who were at bases where fire was not returned by anyone.

1. Nine respondents returned fire. Several of them had interesting stories to accompany their answers. For example, one was part of a group that captured an enemy soldier (outside the base perimeter) during an attack; one went on combat patrols because he could speak Vietnamese (he acted as an interpreter); one was able to shoot two enemy soldiers when his convoy was attacked (he used an unauthorized hand gun); one said they customarily returned fire, even though the standing order was that they not return fire (when asked, they would deny they did it); two manned their base perimeter, as Security Police augmentees, during attacks; two of the remaining three returned fire when their convoys were attacked.

2. Eight did not return fire, but were protected by someone else. A common response from this group was that those who were specifically trained for combat did a better job defending the base and repelling the enemy. Two respondents commented on how effective the AC-47 gunships and Cobra helicopters were and what impressive sights and sounds they created as they pushed back the enemy.

3. Seven claimed that no one returned fire. This does not mean that no one was able to return fire. It simply means that these seven men were at locations where they were either ordered not to return fire or the types of attacks conducted did not allow the American forces to see the enemy (rocket and mortar attacks). A sense of helplessness was noticed in one respondent's comment; he said, "there was nothing to shoot at."

Bonding With the Unit

Paraphrased responses to questions 28 and 29 are shown in Appendix E. When asked to rate the cohesion in their units (question 28), the replies fell into three categories: (1) poor, (2) good, and (3) excellent.

1. One respondent had a negative answer. Respondent 20 said the cohesion in his RED HORSE Squadron was "poor" because communications in the squadron were poor.

2. Eight said the cohesion in their units was either "alright", "good", or "pretty good."

3. Fifteen respondents made it clear they thought the cohesion in their units was "excellent" by qualifying their responses with superlatives like: "best ever seen", it couldn't get any better", and "best damn outfit I was ever in."

Four classifications emerged when the respondents were asked if they had a close association with their units as a whole (question 29): (1) those who thought cohesion was poor

and did not have a close association with the unit, (2) those who thought cohesion was good, but did not have a close association with the unit, (3) those who thought cohesion was good and did have a close association with the unit, and (4) those who thought cohesion was excellent and did have a close association with the unit.

1. Once again respondent 20 was the only person who said cohesion was poor and that he did not have a close association with the unit as a whole. He cited a lack of communications as the reason again.

2. Three of the eight respondents who said cohesion in their units was good also said they felt close to their co-workers only and did not feel close to their units. It is possible that these three men rated the cohesion in their units from observations of the unit without considering their own feelings, or the ratings for the cohesion they provided were based on the cohesion within their immediate work centers without consideration for the entire unit.

3. Five of the eight respondents who said cohesion was good reported that they had a close association with the unit as a whole.

4. The 15 respondents who said cohesion was excellent said they had a close association with the unit as a whole.

Unit Leadership

Appendix F contains paraphrased responses to question 52, "How good was the leadership in your unit?"

Descriptions of unit leadership were categorized into four groups: (1) excellent, (2) good, (3) poor, and (4) mixed.

1. Fourteen respondents said unit leadership was excellent. Additional comments included: "best I ever saw during my Air Force career" and "we had a marvelous commander." An interesting finding is that only four of the 11 BCE respondents said leadership was excellent while eight of the nine RED HORSE respondents said leadership was excellent.

2. All five of the respondents who said unit leadership was good were BCE personnel. The supplementary comments made by these five men suggested that the leadership in their units could have been better. Some of the comments were: "I relied more on the NCOs than on officers for leadership" and "the commander and my superintendent were poor, but all other leaders were good."

3. Three respondents said the leadership in their units was poor. One of these men also said his squadron had poor cohesion in the previous section. Another respondent in this category worked on the 7th Air Force staff; he said the lack of leadership from the man on top had little impact on him and his co-workers because they were all self-motivated and because the void was filled by other officers who were lower in the chain of command. The third respondent in this category was a firefighter. He said the leaders of the squadron were never seen around the fire station until something went wrong.

4. Two respondents gave mixed answers. The first person said he had two commanders; one was good and the other was bad because of a drinking problem. The second person said virtually the same thing when he said, "it was the same as stateside; we had good ones and bad ones. If he could do it in the states, he could do it in Vietnam."

Description of an Effective Combat Leader

Question 53 asked the respondents to describe an effective combat leader; the paraphrased answers are shown in Appendix G. The respondents provided 32 characteristics they thought should be possessed by an effective combat leader. Of those 32 characteristics, 16 were given by at least two respondents:

1. Seven said an effective combat leader takes care of his personnel by ensuring that they have palatable food, a decent place to sleep, and an adequate and safe working environment.
2. Five said he should be decisive and cool headed under pressure.
3. Four said he should be ready to lead. They qualified their answers by saying, "he can not be a coward; he must be a man, a stable force" and "he must be a leader; he can not show fear."
4. Four said he must know his job and must know the technical aspects of his unit's mission.

5. Three said he must get to know his men personally and he should know their capabilities.
6. Three said he should treat his personnel as individuals.
7. Three said he should be fair and understanding.
8. Three said he must have a positive, "can do, will do" attitude.
9. Three said he should know how to deal with people.
10. Two said he should never ask his troops to do something he would not do.
11. Two said he should not be afraid to ask for help from enlisted personnel.
12. Two said he should let his personnel do their jobs without constantly badgering them.
13. Two said he should ensure that his personnel are properly trained for the work they are required to do.
14. Two said he should have the ability to keep his personnel calm during tense situations.
15. Two said he should stay apprised of intelligence reports so that he can keep his men informed of the dangers in their area.
16. Two said he should be a respectable and believable person.

Morale Factors

Appendix I contains paraphrased responses to interview questions 24 and 25 (What things helped you get through the

tour? and Were there things that kept you going when times got tough?) The respondents cited 33 items that either helped them get through the tour or were things that kept them going. Of the 33 items, 18 were mentioned by more than one respondent:

1. Thirteen said letters from home.
2. Nine said recreation time; this included going fishing, to movies, to the BX, etc.
3. Six said their dedication to the mission and the knowledge that they were contributing something to their country.
4. Six said their religious beliefs.
5. Six said they knew they would eventually go home.
6. Five said they stayed busy at work, even during non-duty hours.
7. Five said thoughts of home.
8. Four said the camaraderie within their units.
9. Four said they had good food.
10. Four said they went sightseeing during off duty hours.
11. Four said they came to grips with their situation and told themselves they would have to make the best of it.
12. Three said they did volunteer work.
13. Three said the knowledge that their families were okay and being taken care of.
14. Two said decent living quarters.
15. Two said they had close friendships.
16. Two said they exercised.

17. Two said they spent time in the NCO clubs.
18. Two said they found solace in the fact that their situations were not as bad as some other Americans in Vietnam (such as Army and Marine personnel).

Biggest Problem in the Combat Zone

The responses to question 15, the biggest problem faced by Civil Engineering in a combat zone, are paraphrased in Appendix J. One respondent did not give an answer because he said his tour went well, with no problems. Most of the 23 respondents who answered the question provided more than one problem. As a result, 26 problems were cited. Of those 26 problems, 11 were mentioned more than once:

1. Twelve said the supply system. The type and amount of tools, equipment, and spare parts were inadequate.
2. Ten said they lacked proper combat training.
3. Seven said they were never told what to expect, such as the weather, the working conditions, and especially, the stresses and strains of the combat environment.
4. Five said the troops were not properly trained for the work they did. They were trained in maintenance and repair, not construction. Also, no one was multiskilled.
5. Four said the NCOs and officers were not qualified to be supervisors.
6. Four said they lacked adequate protection from enemy attacks.

7. Four said the anxiety and stress caused from worrying about the next enemy attack.
8. Three cited the language barrier between the Americans and the Vietnamese.
9. Two said knowing that some of the Vietnamese laborers they worked with were enemy soldiers.
10. Two said the weather because the monsoons adversely impacted the construction effort and because most people were not prepared to work in that kind of heat.
11. Two said short deadlines for completing their work.

Recommendations for Combat Preparation

Recommendations on how to better prepare Civil Engineering troops for operations in a combat zone, answers to question 16, are listed in Appendix K. Three respondents did not supply an answer; one of those three, assigned to a RED HORSE Squadron, said he could not have been better prepared; the other two said the question was too difficult to provide an answer. Most of the 21 respondents who answered the question gave more than one recommendation for combat preparation; 10 different recommendations resulted. It is interesting to note that nine of the 10 recommendations involved some sort of training. Of the 10 recommendations, seven were provided by more than one respondent:

1. Six said the troops should go through an indoctrination program conducted by personnel who had been there. The

logic was that those who had worked, lived, and survived in a combat environment would be best qualified to convey the most pertinent information needed by those who would soon be in a combat environment. The program should include instructions on what to expect from the weather, the job, the combat aspects of the environment, and the indigenous personnel in the area. The respondents thought this type of indoctrination would help to mentally prepare the troops for what they would experience, thus, enabling them to react properly in different situations.

2. Six said the troops should receive combat training similar to the kind of training done in the Army and Marine Corps. The training should include extensive instructions in weapons and ground force tactics.

3. Four said officers and NCOs should have leadership experience in a non-combat environment before they are sent to a combat environment. These respondents thought the leadership in their units was less than adequate because many of the officers and NCOs had not had any leadership opportunities, in a non-combat environment, to prepare them for their wartime roles.

4. Four said the troops should be exposed to realistic scenarios which include the weather conditions, the enemy threats, and the working hours they will experience once they get to the combat zone.

5. Three said the troops should be properly trained in their AFSCs before they go. Being properly trained included

being proficient in their trade, having construction expertise, having knowledge of expedient repairs, and being multiskilled.

6. Two said the troops should have hands-on training with the type of equipment and materials they will be working with in the combat zone so they can become familiar with the idiosyncracies of the equipment and materials.

7. Two said all Civil Engineering personnel should receive the type of training that RED HORSE troops got. This means they should deploy to a location as a team and be instructed in weapons, ground force tactics, and Civil Engineering related tasks as a team. The respondents thought this would allow the troops to become a cohesive group and would better prepare them for combat.

The remaining recommendations for combat preparation provided by the respondents can be found in Appendix K.

Desired Training

Appendix L shows the paraphrased answers to questions 37 and 38. The respondents were asked if there were any aspects of the combat experience they would have liked to have known about before they got there and if there was any training they would have liked to have had before they got there. Three respondents who were assigned to RED HORSE Squadrons did not supply an answer (not the same three who did not give an answer for the previous section); one said he and his Squadron were totally ready when they got there;

another said it is impossible to properly prepare someone for combat; the third one said the combat training he received while he was in the Army adequately prepared him. The 21 respondents who answered the question each provided more than one answer which resulted in a total of 19 different responses. Of the 19 items, six were provided by more than one respondent:

1. Fifteen said an indoctrination program conducted by those who had been there was needed. The program should have included how to work, live, and survive in the combat environment, how to work in the hot and wet climates of Vietnam, and what to expect from the local people.
2. Twelve said they should have had combat training similar to the kind the Army and Marine Corps provide to their personnel.
3. Five said they should have had extensive weapons training. They would have liked to have been capable of handling mortars, M-60s, and grenades. Also, they wished they would have had training on all weapons, including the M-16, more than once a year.
4. Four said they should have been given instructions on how to mentally prepare themselves for their pending assignments so they could have been better equipped to deal with the psychological stresses associated with the combat environment.
5. Three said they should have had extensive exercises and deployments which included exposure to the sights and sounds

of an attack and combat maneuvers with aggressor forces. The deployments should have been long enough to adequately educate the troops on what it is like to operate in that kind of environment and in those kinds of facilities.

6. Two said they should have had training in expedient repairs to facilities, utilities, and airfield pavements.

Initial Reaction to Hostile Fire

The respondents' answers to question 18, their initial reaction to hostile fire, are listed in Appendix M. The responses formed four categories: (1) confusion, (2) fear, (3) took cover, and (4) felt an urgency to do what was needed. Thirteen cited only one of the items shown above as their initial reaction to hostile fire. Their responses fell into four groupings:

1. Six said they took cover.
2. Five said they were scared.
3. One said he was confused.
4. One said he had an urge to do what was needed and he returned fire.

Eleven respondents claimed their initial reactions were a combination of two or more of the items listed above.

Their responses fell into seven groupings:

1. Two said they were scared and took cover.
2. Two said they were confused and took cover.
3. Two said they were confused and scared.
4. Two said they were confused, scared, and took cover.

5. One said he was scared when he first came under fire during World War II, but he had an urge to do what was necessary when he first came under fire in Vietnam. This man was the second oldest respondent and the highest ranking enlisted person among the respondents.

6. One said he felt an urge to do what was needed and he took cover. The respondent had the urge to do something because his first exposure to enemy fire came during a convoy ambush and his life was in imminent danger.

7. One said he was confused and felt an urge to do what was necessary. He attributed the urge to the RED HORSE training he received before he got there.

After compilation of the mixed and single responses, the four reactions were mentioned as follows:

1. Thirteen said they took cover.
2. Twelve said they were scared.
3. Eight said they were confused.
4. Four said they felt an urge to do what was necessary.

Training and Perceptions of Preparedness

Paraphrased responses to questions 3, 35, and 36, dealing with training and feelings of being prepared for combat, are summarized in Appendix N. The answers provided by the 24 respondents fell into three categories: (1) those who did not feel prepared for combat, (2) those who felt prepared for combat, and (3) those who did not give a definite response:

1. Twelve said they were not prepared for combat. Six of the 12 said they weren't prepared because they had not received proper combat training or any kind of combat training; the others did not provide a reason. Nine of the 12 were assigned to BCE units and two were assigned to RED HORSE units. Personnel assigned to BCE units did not receive the type of combat training given to most RED HORSE personnel. In fact, many BCE personnel went to Vietnam with only minimal M-16 training. Despite the fact that most RED HORSE units received combat training, as a team, prior to arrival in Vietnam, one of the RED HORSE respondents who went through the training said people can never be ready for combat, regardless of the amount of training they get. The other said he did not get the RED HORSE training before he went. However, he was in the Army before he joined the Air Force and he said he went through Army combat training when he was 15 and it was of no use to him eight years later.

2. Ten said they were prepared for combat, five were RED HORSE personnel, two were BCE personnel, two were on Prime BEEF teams, and one was an instructor in the Vietnamization Program. Four of the five RED HORSE personnel went through the RED HORSE combat training; the fifth RED HORSE respondent said he felt prepared because of the Army combat training he received prior to joining the Air Force. One of the BCE respondents said he was prepared because he studied Army tactics via correspondence while he was an aircrew member during World War II. The other BCE respondent said

he was a Security Police augmentee and went through their training after his arrival; he said the training could have been better, but he felt prepared anyway.

3. Two did not provide a definite answer, both were RED HORSE personnel and both went through the RED HORSE combat training. One respondent said the training was good, but it was impossible to prepare for the unexpected or to prepare for being killed. The other did not provide any kind of answer.

The following chapter will use the results presented in this chapter and the information obtained through the literature review to answer the investigative questions posed in Chapter I.

V. Discussion

Overview

This chapter answers the investigative questions posed in Chapter I by using the information gathered through the interviews and the literature review. This thesis replicated and expanded the research done by Captain Lauson. The database for this thesis was compiled so that it could be added to Captain Lauson's database and used in future research. A second reason for collecting the data was to determine if the conclusions made by Captain Lauson could be replicated and thus, verified by the present research.

Therefore, this thesis had the same research objectives:

1. To identify significant aspects of combat experienced by Air Force Civil Engineering personnel in Vietnam.
2. To identify questions which future research should consider in determining how to better prepare Civil Engineering personnel for combat.

The ultimate goal of this research was to acquire knowledge by documenting the lessons learned by Civil Engineering personnel who were exposed to hostile fire while they served in Vietnam and to develop preliminary conclusions on how to better prepare today's Civil Engineering personnel for future conflicts. The goal of this research was achieved by accomplishing the research objectives. To achieve the research objectives, this thesis sought to answer four investigative questions.

Investigative Question One

What kinds of ground combat situations did Air Force Civil Engineering personnel encounter in Vietnam?

Sweeping generalizations can not be made about the average attack experienced by Civil Engineering personnel because too many variables are involved (time in Vietnam, locations assigned to, friendly and enemy activities in the area, types of weapons used, etc.). However, it is possible to summarize the responses found in Appendix C.

The respondents reported that they were attacked by enemy soldiers who used mortars, rockets, and small arms more than any other weapons. These weapons were used during attacks on installations and convoys.

The respondents were almost evenly divided when they described the damage inflicted during the attacks; 13 thought the damage was significant and 11 thought the damage was minor. Nonetheless, they all reported that their lives were in danger and a large majority reported that damage was done to aircraft, airfield pavements, and buildings.

The number of times the respondents were exposed to hostile fire ranged from one time during an entire tour to more than 100 times during a similar time frame. The length of the attacks experienced ranged from 15 seconds to eight hours; ten respondents said the attacks lasted no more than 30 minutes.

The respondents gave answers based on what they remembered as the usual length of attacks. It is

interesting to note that eight of the respondents reported they had been under attack, at least once, from one to three hours or longer (eight hours was reported by one person). They noted that these particular attacks were longer than ordinary. One respondent indirectly commented on the seriousness of any attack when he said, "they seemed to last a lifetime, but they were really only 5-10 minutes long."

Another aspect of the combat situation in Vietnam was whether or not fire was returned (see Appendix D). The number of combat troops assigned to an installation (among other things) impacted on the type of attacks conducted by the enemy and whether or not Civil Engineering personnel were needed to help defend the base. Also, the respondents said everyone in a convoy was armed and poised for an ambush. The amount of protection given to Air Force installations by the Security Police (SP), the U.S. Army (USA), the Republic of Korea (ROK) Army, and the U.S. Marine Corps varied from location to location and from year to year. As a result, nine of the respondents said they returned fire and actively helped defend themselves and their comrades, either during a base attack or during a convoy ambush.

The final important aspect of the combat situation which Civil Engineering personnel faced in Vietnam was that they didn't know if they could trust the local citizens who worked on base with them. Several respondents reported they had more Vietnamese laborers in their squadrons than

Americans. Several respondents reported that some of the Vietnamese people who worked in their shops turned out to be enemy soldiers. One respondent said even the children had to be cautiously watched. In one story, he spoke of a small group of Vietnamese teenagers who prowled around the tents where Civil Engineering personnel slept; the Vietnamese teenagers killed some Civil Engineering personnel by cutting their throats while they slept.

In summary, a description of the typical combat situation experienced by Civil Engineering personnel in Vietnam can not be derived because too many variables were involved. However, based on the comments provided by the respondents, the researcher concluded that the lives of Civil Engineering personnel were in danger while they were in Vietnam. The danger stemmed from enemy attacks on installations and convoys that caused a variety of damage. The attacks were as short as 15 seconds and as long as eight hours. Finally, the respondents reported that mortars, rockets, and small arms were most often the enemy's choice of weapons.

Investigative Question Two

What major problems did Civil Engineering personnel encounter in the Vietnam combat zone?

As discussed in Chapter IV, the respondents identified 11 problems they considered the biggest problems faced by Civil Engineering personnel in the combat zone (see Appendix J). In order to answer this investigative question a

problem was categorized as "major" if five or more respondents cited it as a problem. Using this criterion, four of the 11 problems addressed in Chapter IV were judged to be major problems:

1. An inadequate supply system
2. Insufficient combat training
3. Inadequate preparation for the assignment
4. Insufficient technical training

An Inadequate Supply System. This was the problem most frequently identified during the interviews; it was cited by 12 respondents. The specifics of this problem included shortages of materials, tools, equipment, and spare parts. Also, the supplies and equipment they received were often inferior or inappropriate for the job. One respondent said he knew the equipment they received was old and had been previously used because he noticed that the serial numbers had been changed. Another respondent said he had a difficult time getting enough food to feed his unit. All other comments related to food dealt with a lack of quality, not quantity.

The respondents said they could do nothing to improve the situations they experienced with the supply system. Therefore, they resorted to other means to obtain the things they needed to do their jobs. One respondent said he heard about the supply problems before he left for Vietnam; he and others in his unit took their own tool boxes and left them behind when it came time to leave so that others could use

the tools. Another respondent said he was able to obtain building materials from a local Vietnamese businessman quicker (usually within a few days) than he could get them through the supply system. Still another respondent said he and his co-workers resorted to stealing to obtain the things they needed. The majority of the respondents said they had to barter for many of the things they acquired to do their jobs. Many times they received supplies that were not adequate for what they needed. Therefore, they usually had a surplus of an item that was of value to someone else.

Insufficient Combat Training. This problem was mentioned by 10 respondents because they found themselves in situations they were not prepared for; they were not properly trained for combat. The distinctive supporting evidence in this category included deficiencies in fire team tactics, application of fields of fire, work party security, perimeter defense, convoy tactics, and weapons training. A common belief among these respondents was that the Air Force must provide training on combat weapons and tactics to personnel who might someday be involved in ground combat. Several of these respondents received some weapons training and some combat training via RED HORSE before they went to Vietnam. However, they thought the training they went through could have been better and should have been more realistic. Those respondents who did not receive RED HORSE training, but did get minimal M-16 training, said they should have had more weapons training (in addition to combat

tactics training) which included a larger variety of weapons and more hands-on time with the weapons. Finally, another common conviction among these 10 respondents was that a person can not remain proficient with a weapon if the person fires it only once per year.

Inadequate Preparation for the Assignment. The symptoms relevant to this category do not include the combat training issues mentioned in the previous section. Instead, the seven respondents who perceived this problem were referring to the lack of a proper indoctrination program. They said they were never told what to expect in Vietnam with regards to the weather, the working conditions, the long hours, the attitudes of the local Vietnamese people toward Americans, or the combat environment. These respondents thought they would have been better able to make the transition from what they were accustomed to in the United States to what they experienced in Vietnam if someone had told them, in detail, about the items listed above. One respondent capsulized the feelings of these seven respondents when he said they were unable "to psychologically adjust to the situations they were in."

Insufficient Technical Training. The five respondents who indicated this problem said Civil Engineering personnel were not adequately trained to do their jobs and that very few people were multiskilled. The respondents said many Civil Engineering personnel were sent to Vietnam with little or no technical training; those that had some training were

taught primarily how to perform maintenance and repair work. Most Civil Engineering personnel were not familiar with how to do construction work which is vitally needed during the buildup phase of an installation in a combat zone and after enemy attacks. Also, one respondent said Civil Engineering personnel lacked the knowledge and ability to perform expedient repairs to utilities, buildings, and airfield pavements. Finally, despite the fact that most people would help other shops where they could, these respondents said situations would have been better if the troops had been multiskilled because the personnel could have helped each other more. They did not think that all personnel should have been able to perform all of the tasks of every other trade. However, they thought a carpenter should be able to do electrical work and vice-versa (one example). Their idea was to give each craftsman the ability to do more work on a single project without having to rely on craftsmen from other shops.

To summarize, the problem cited by the most respondents was an inadequate supply system. The respondents said they had to barter and steal to obtain the materials, tools, and equipment they needed. The second problem was insufficient combat training. The respondents thought they were not properly prepared for the combat situations they experienced. The third problem was inadequate preparation for the assignment. The respondents thought they did not receive an adequate indoctrination before they were sent to

Vietnam. The fourth problem was insufficient technical training. The dominant aspects of this problem were a lack of personnel who knew how to do construction work, knew how to do expedient repairs, and could perform tasks of more than one trade (multiskilled).

Investigative Question Three

During the Vietnam War, how could the Air Force have better prepared Civil Engineering personnel for combat?

As discussed in Chapter IV, seven recommendations on how Civil Engineering personnel could have been better prepared for combat in Vietnam were offered by two or more respondents (see Appendix K). Also examined in Chapter IV were six items identified by two or more respondents as having had the potential of being useful to them if they had gotten them before they went to Vietnam (see Appendix L). To answer this investigative question, the responses from Appendix K and Appendix L were compared and combined. This resulted in four general areas for the discussion of how the Air Force could have better prepared Civil Engineering personnel for combat.

1. Indoctrinate on what to expect
2. Provide realistic combat training
3. Ensure officers and NCOs know how to supervise
4. Provide better technical training

All six of the items offered as having had the potential for being useful if they had gotten them before they got there fell into one of the categories listed above. Thus, these

similarities show a consistency of answers provided by the respondents for the questions summarized in Appendix K and Appendix L.

Indoctrinate on What to Expect. The respondents who provided this answer said all Civil Engineering personnel should have gone through an indoctrination program before they went to Vietnam. Civil Engineering personnel who had spent time in a combat zone in Vietnam should have been involved, either as instructors or advisors, to ensure that pertinent information was conveyed. The respondents thought the indoctrination should have contained explanations of what to expect with regards to the weather, the job, the equipment and materials used, the combat environment, the indigenous personnel of the area, and the mental preparations needed to psychologically adjust. The respondents also thought the indoctrination should have included actual examples which incorporated practice time with the type of equipment and materials that were used in Vietnam and which demonstrated what attacks look like and sound like. The respondents said they should have been told about and shown (where possible) these items because each one caught them unprepared. In each area listed above, they were not properly equipped to handle what they experienced.

Provide Realistic Combat Training. The respondents who offered this answer realized that their main reason for being in Vietnam was not to engage the enemy in combat. Nonetheless, all 24 of the respondents found themselves in a

combat situation at least once and nine respondents personally returned fire. Therefore, these respondents thought they should have been better prepared for combat. They thought they should have received training similar to the kind given to Army and Marine Corps combat troops, or at least RED HORSE combat training should have been given to all Civil Engineering personnel before they went to Vietnam. The respondents said they should have been given extensive training in ground force tactics, convoy tactics, and extensive training in a variety of weapons.

Ensure Officers and NCOs Know How to Supervise. The respondents who gave this answer thought the officers and NCOs in their units were not qualified to be supervisors or leaders in a combat zone. The respondents said the officers and NCOs in their units did not have enough experience to be as effective as they should have been. This caused the officers and NCOs to resort to unnecessary methods to accomplish the job; they became tyrants. The pressures added by the combat environment and the immense workload (consisting of many urgent projects) exacerbated the problems caused by mediocre officers and NCOs. The respondents did not necessarily agree that "the best baptism is baptism under fire" and they thought their situations would have been better if the officers and NCOs had been more experienced and thus, better prepared to deal with large numbers of personnel and large amounts of urgent work in a combat zone.

Provide Better Technical Training. The respondents who supplied this answer said their units experienced many problems caused by the practice of training Civil Engineering personnel in normal maintenance and repair techniques while neglecting training in construction skills, expedient repairs, and training to produce multiskilled craftsmen. The problems caused by the lack of construction skills were most noticeable during the early years of the war when the buildup was in full swing. It was also prevalent when facilities had to be replaced due to damage caused by attacks. The lack of construction skills among Civil Engineering personnel caused the buildup of several bases to take longer than planned. Also, the lack of expedient repair skills was most visible immediately following attacks. The respondents said they should have had training in expedient repairs which would have given them the capability to do emergency repairs to airfield pavements, utilities, and facilities. Finally, the respondents said they should have been trained in more than one skill (multiskilled) to allow themselves and their units to be more productive at a time when maximum productivity was critical to mission accomplishment.

In summary, the first recommendation provided by the respondents was that the troops should have been indoctrinated on what to expect. The respondents thought a thorough indoctrination program, run by Civil Engineering personnel who had spent time in Vietnam, would have been

valuable. The second recommendation was that the troops should have had realistic combat training. The respondents said they were not prepared for the combat they experienced; therefore, they thought they should have had realistic combat training. The third recommendation was that officers and NCOs should have known how to supervise before they entered the combat zone. The respondents said inexperienced officers and NCOs caused problems in their units. The final recommendation was that better technical training should have been given. The respondents said the troops should have been trained to do construction work, expedient repairs, and tasks from multiple trades (multiskilled). The respondents showed a great deal of consistency in their answers; three of the top four major problems discussed in investigative question two were also discussed as primary reasons for three of the four recommendations provided for this investigative question.

Investigative Question Four

What is the Civil Engineering community currently doing to prepare its personnel for the next war?

As discussed in Chapter II, the Civil Engineering community has recently published AFM 2-XZ, Volume 1, Civil Engineering Combat Support Doctrine (a draft document) and the Prime BEEF Wartime Task Standard (WTS). Both documents were created to provide guidance to Civil Engineering personnel as they prepare themselves and their units for the next war. The researcher is not suggesting that these

documents are the only initiatives currently offered by the Civil Engineering community. For example, Civil Engineering personnel are able to attend the Air Base Combat Engineering Course offered by the School of Civil Engineering and Services (AFIT). Also, there is an Air Force-wide competition, Readiness Challenge, which was implemented to test the combat engineering abilities of Civil Engineering personnel and to encourage more readiness training throughout the Air Force. Finally, Prime BEEF training at all Air Force bases is highly emphasized. Nonetheless, AFM 2-XZ and the Prime BEEF Wartime Task Standard are the only undertakings discussed in this section because both are fairly new documents and many Civil Engineering personnel do not know they exist.

These documents attempt to demonstrate the importance of preparing now for the next conflict. AFM 2-XZ suggests that Civil Engineering support is critical to "sustaining Air Force operations" in future combat environments (AFM 2-XZ, 1989:i). It is interesting to note that all of the items shown below were discussed by one or more of the respondents and appear in either AFM 2-XZ, the Prime BEEF WTS, or both.

1. Air bases are no longer safe havens.
2. Personnel who operate and maintain bases in peacetime must also recover and restore them in wartime.
3. Personnel (officers and enlisted) must be skilled and effective combat engineers, possessing not only strong

technical expertise, but also wartime skill and leadership abilities.

4. Personnel must understand the wartime environment.
5. Personnel must be multiskilled, enabling them to perform tasks outside their normal mission areas and able to perform expedient repairs.
6. Personnel must be prepared to provide work site security, provide convoy security, and to assist security forces with air base ground defense.
7. Units must organize in peacetime to transition rapidly and easily to a wartime role.
8. Personnel must be trained and educated to perform all of their duties across the spectrum of conflict and in a wide range of conditions.
9. Personnel are first and foremost warriors, performing the engineering mission during combat.
10. Personnel learn their warfighting skills through effective, realistic training. Training must be stressful, relevant, evaluated, and of sufficient duration to physically and mentally prepare personnel for the rigors of contingencies and combat.
11. Personnel should learn the language used in the deployment area (AFM 2-XZ, 1989:2-5, 11-12, 15, 19-20, 22; AFESC, 1989).

In conclusion, all 11 of the items shown above were discussed by one or more of the respondents during the interviews and have been incorporated into AFM 2-XZ and the

Prime BEEF Wartime Task Standard. This fact shows that the Civil Engineering community has begun to implement some of the lessons learned by personnel who spent time in a combat environment in Vietnam. Thus, considering the comments made by the respondents during this research, the Civil Engineering community is now headed in the right direction to prepare its personnel for the next war.

This chapter answered the investigative questions by using information gathered through the literature review and the interviews. The next chapter will discuss the similarities between the conclusions made by Captain Lauson and the conclusions suggested by the information provided in this chapter and in Chapter IV. The next chapter will also provide recommendations for further research in this area.

VI. Conclusions and Recommendations

Overview

The information accumulated during this research was gathered so that it could be added to the database compiled by Captain Lauson for use in future research. A second reason for collecting the data was to determine if the conclusions made by Captain Lauson could be replicated and thus, verified by the present research. This chapter will discuss the similarities between the conclusions made by Captain Lauson and the conclusions derived from the information gathered during this research. Additional recommendations for further research in this area will also be made.

Comparison of Conclusions

Research Objective One.

To identify significant aspects of combat experienced by Air Force Civil Engineering personnel in Vietnam.

The following discussions address the 13 items that Captain Lauson found to be significant aspects of combat experienced by Air Force Civil Engineering personnel in Vietnam. These are the 13 items he judged "deserving of consideration in preparing Air Force Civil Engineering personnel for combat in future conflicts" (Lauson, 1989:116). The discourses will explain if the conclusions made by Captain Lauson are supported by the data collected during this research.

1. Combat experiences in BCE units were widely varied and appeared to depend on the location, time frame and the availability of combat troop support in Vietnam.

The information provided by the respondents supported this conclusion. In addition, this conclusion was also valid for RED HORSE units, Prime BEEF units, and personnel who had staff jobs. All 24 of the respondents experienced enemy attacks, but not everyone shared the same amount of frequency or intensity of enemy attacks. No trend emerged to suggest the type of unit a person was assigned to had an impact on the number or intensity of attacks experienced by the respondents.

2. Junior officers in BCE units lacked essential combat engineering skills.

The information provided by the respondents partially supported this conclusion. In general, junior officers and NCOs were reported, by three BCE personnel, to have lacked proper management and leadership skills. Not one of these three said that officers lacked engineering skills; a lack of "people skills" was the only thing mentioned.

3. Some BCE personnel did succumb to psychiatric stress in Vietnam.

This conclusion was supported by the present research. Furthermore, 12 respondents, representing each type of unit, reported that psychiatric stress occurred in their units. Thus, psychiatric stress was not found exclusively in the Base Civil Engineering units. Two respondents said one or more personnel in their units committed suicide. The respondents thought the psychiatric stress was caused most

often by family and marital problems, receiving bad news from home (such as a death in the family), drug abuse, and "Dear John" letters.

4. BCE personnel encountered problems that were totally different from problems that characterized U.S. bases.

This conclusion was supported by the present research; the research also suggested that this conclusion was valid for RED HORSE units, Prime BEEF units, and personnel who had staff jobs. Seventeen respondents cited that problems were different from the problems encountered at U.S. bases. The list of problems offered by the respondents included: more short notice taskings, personnel were not trained for the work they were required to do, a lack of food, a lack of tools, equipment, and materials, a language barrier, safety procedures were neglected, and the stress attributable to the combat environment. It is interesting to note that four respondents said there were differences between bases in Vietnam and typical U.S. bases, but they did not categorize the differences as problems. In fact, these four respondents said the units they were assigned to in Vietnam were better than units at U.S. bases because of the following differences: paperwork was minimal, bureaucracy was minimal, and the Vietnam bases had more of a mission which caused the troops to feel needed.

5. BCE units experienced shortages in tools, heavy equipment and construction materials.

This research supported this conclusion for RED HORSE units and Prime BEEF units, as well as for BCE units. The

respondents said they had to routinely barter for tools and construction materials. Many of the respondents thought the supply system was incapable of meeting their needs; one respondent was forced to deal directly with a local Vietnamese businessman for materials and another respondent said he and his co-workers sometimes stole the materials they needed to do their job.

6. Having many different types of portable electric generators in Vietnam made adequate supplies of generator parts difficult to maintain.

The information provided by the respondents did not support this conclusion. Two of the respondents were in the power production career field and worked with generators while they were in Vietnam. Neither respondent provided any information to suggest they had problems with portable generators.

7. Subordination of military craftsmen and NCOs to civilian supervisors degraded BCE supervisory and technical capabilities in Vietnam.

This conclusion was partially supported by this research for two reasons. First, one respondent, an Equipment Operator in a RED HORSE Squadron, said his technical capabilities were not as good as they could have been because he did not get as much "stick time" as the civilians in his stateside shop got on the heavy equipment. Second, two respondents said the NCOs in their units were not prepared to be supervisors or leaders because they did not have opportunities to supervise or to lead while they were at their stateside bases.

8. Personnel in BCE units were not informed on the potential for enemy attacks against the base, nor were they told how to respond to different attack scenarios.

The information provided by the respondents supports this conclusion for BCE and RED HORSE personnel because four BCE personnel and two RED HORSE personnel said they were confused the first time they were under enemy attack. Also, one BCE respondent said he and his unit were lead to believe that they would not be required to participate in ground combat.

9. In general, BCE and RED HORSE personnel appeared to have been uninformed about life in the combat zone.

This conclusion was strongly supported by the respondents. Seventeen respondents who represented personnel from each type of unit said they lacked proper combat training or lacked a proper indoctrination of what to expect in Vietnam before they arrived. As a result, the respondents said they were not prepared to deal with the stresses of living and working in a combat environment. Also, the majority of the respondents thought they were not adequately trained to participate in ground combat.

10. In general, many BCE personnel felt unprepared for combat in Vietnam.

The information provided by the respondents strongly supported this conclusion for the BCE personnel. Nine of the eleven BCE personnel reported that they did not feel prepared for combat. It is also interesting to note that two RED HORSE respondents said they did not feel prepared for combat; one of these respondents went through the RED

HORSE combat training and the other respondent went through Army combat training when he was 15 years old.

11. In both RED HORSE and BCE units, some Civil Engineering personnel directly participated in combat.

This conclusion was supported in the present research for BCE, RED HORSE, and Prime BEEF personnel. Three BCE personnel said they returned fire; five RED HORSE personnel said they returned fire; one Prime BEEF team member said he returned fire. The experiences shared by the respondents included combat patrols for one respondent who acted as an interpreter, one respondent who helped to capture a prisoner, and one respondent's recollections of shooting two enemy soldiers when his convoy was ambushed.

12. Cohesion and morale in RED HORSE units in general was excellent and appeared related to unit rotation/training.

This conclusion was supported by the research; six of the nine RED HORSE respondents said the cohesion in their units was excellent and eight of the nine RED HORSE respondents said they had a close association with their units as a whole. Several RED HORSE respondents spoke of a special bond that existed between the personnel in their units. They attributed the creation of the special bond to the interactions they had as a unit while they went through the RED HORSE combat training and the intense experiences they shared in the combat environment. However, this research also suggested that excellent cohesion and morale existed in BCE units, Prime BEEF teams, and staff functions. Five BCE

personnel, two Prime BEEF personnel, and two personnel assigned to staff jobs said the cohesion in their units was excellent and eight of the 11 BCE personnel, both of the Prime BEEF personnel, and both of the personnel who had staff jobs said they had a close association with their units as a whole. Some of these respondents also talked about a special bond that was present in their units. They credited the interactions they had with each other and the intense experiences they shared in the combat environment as the catalysts for the special bond also. The only difference between the explanations given by the RED HORSE personnel and the explanations given by the BCE personnel to explain the existence of the special bonds in their units was the fact that the interactions for the RED HORSE personnel started when the combat training started and the interactions for the BCE personnel started after an individual arrived in Vietnam. The data from this research did not suggest the morale and cohesion within RED HORSE units were greater than the morale and cohesion in any other type of Civil Engineering unit.

13. Having BCE personnel trained in more than one skill would have been desirable.

The information provided by the respondents supported this conclusion. When asked what the biggest problem in the combat zone was, five respondents said that Civil Engineering troops were not properly trained; this criticism included a lack of multiskilled craftsmen. Also, when asked

to give some recommendations on how to better prepare Civil Engineering troops for operations in a combat zone, three respondents said that the troops should be properly trained to include skills in more than one craft.

Final Comments Regarding the Conclusions. The present research fully supported 10 of the 13 conclusions suggested by Captain Lauson's thesis. Two of the remaining three conclusions were partially supported, and one was not supported in any way. Therefore, within the degree of certainty provided by exploratory research, it is reasonable to assume that 12 of the 13 conclusions are generally correct. The researcher is not suggesting that the unsupported conclusion from Captain Lauson's thesis is incorrect. On the contrary, this thesis simply did not support the conclusion; it may still be an accurate conclusion. Finally, researchers who wish to combine the database from this thesis with Captain Lauson's database for further research should feel confident with the data they will inherit.

Recommendations

Research Objective Two.

To identify questions which future research should consider in determining how to better prepare Civil Engineering personnel for combat.

The following questions were identified in Captain Lauson's thesis as recommendations for future research (Lauson, 1989:118-119). During the course of conducting the

interviews for this thesis and the analysis thereafter, Captain Lauson's questions were judged to be relevant and are recommended for future research on how to better prepare Civil Engineering personnel for their wartime roles in future conflicts.

1. How has contingency training changed in Civil Engineering since the end of the Vietnam War?
2. What types of enemy ordinance are Air Force Civil Engineering personnel likely to encounter in future conflicts? Are Civil Engineering personnel being trained on how to deal with these weapons?.
3. Are junior officers in Civil Engineering developing the skills they will need in war?
4. Do junior officers understand the tasks they will be expected to perform in combat?
5. Do NCOs understand the tasks they will be expected to perform in combat?
6. To what extent do Civil Engineering personnel need to be able to work outside their own specialties? What specialties should be familiar with what other specialties?
7. What information does the Air Force plan to provide Civil Engineering personnel about their mission before sending them into combat?
8. What information should the Air Force provide Civil Engineering personnel on what they can expect to encounter in combat (such as combat stress and psychiatric casualties).
9. A larger sample of RED HORSE personnel is needed to determine how well prepared RED HORSE was for combat in Vietnam. There were too many confounds (such as personnel being rotated out of cycle into the unit) to reach even a tentative conclusion on the adequacy of preparation of RED HORSE units for combat.

The following questions were identified during the present research as recommendations for future research.

1. How have Air Force Major Commands and bases implemented the guidance stipulated in AFM 2-XZ, Volume 1, Civil Engineering Combat Support Doctrine?
2. How have Air Force Major Commands and bases implemented the guidance specified in the Prime BEEF Wartime Task Standard?
3. What training methods should be adopted to ensure the objectives specified in AFM 2-XZ are met?
4. What training methods should be employed to ensure that Civil Engineering personnel are able to accomplish the tasks detailed in the Prime BEEF Wartime Task Standard?

The Author's Final Comments

Conducting this thesis was a humbling experience for the researcher. This study caused the researcher to make a significant realization: choosing an Air Force career is serious business. For example, during the time frame this research was accomplished, our Commander-in-Chief, President George Bush, sent American troops into combat in Panama (Operation Just Cause). He also sent American troops, including Civil Engineering personnel, to the Persian Gulf area to protect Saudi Arabia (Operation Desert Shield) from President Saddam Hussein of Iraq. Hussein invaded Kuwait and caused a disturbance in many other countries, mostly due to the threats he posed to the world's oil supply. Many heads of state expected Saudi Arabia to be his next target for invasion.

The two events described above, despite the notion that the Cold War is over, still made it obvious that American military forces must be ready to deploy, with little or no notice, to foreign lands in order to perform their wartime missions. Furthermore, the information gathered through the interviews with Civil Engineering combat veterans made it clear that Civil Engineering personnel, and perhaps all Air Force personnel, will be susceptible to involvement in combat during future wars. Also, this study convinced the researcher that no one can be over prepared for combat and that readiness should be more than a catchy phrase. Finally, for every member of the Air Force, readiness, including proper training and psychological preparations for the combat environment, should be an integral part of the great way of life they have chosen.

Appendix A: Interview Questions

Entry Into The Combat Arena

1. Why did you join the Air Force?
2. Did you go through OTS, ROTC or the Academy?
3. Before Vietnam, what kind of military training did you have?
4. What assignments did you have before being assigned to Vietnam?
5. Were you a volunteer for South East Asia (SEA)?
Yes - Why did you volunteer?
No - How did you feel about it?
6. Before going to SEA, what did you hear about Air Force engineering jobs over there?
How did you hear about them?
7. Did you hear anything about coming under fire in Vietnam?
How did you hear about it?
8. When (month and year) did you arrive in SEA?
9. Where were you assigned?
10. For my records, how old were you when you got there?
What was your rank?
11. I'd like to get an idea of the type of unit you were assigned to.
 - a. In general, what was it's mission?
 - b. How large was it, about how many people were assigned?
 - c. How was it organized?
12. What was your job in Vietnam?
13. What was a typical day like for you?

14. Were there any big differences in getting the job done over there compared with typical stateside operations?
15. In your opinion, what's the biggest problem faced by Civil Engineering in a combat zone? Why?
16. Do you have any ideas on how we can better prepare CE troops for operations in a combat zone?
17. You have already told me you came under fire, now I'd like to ask you some questions about that, if I may.

How often were you exposed to enemy fire?

- a. What kind was it?
 - b. Were you able to return fire?
If so, how?
 - c. Did anybody return fire?
If so, how?
 - d. What kind of damage did the enemy do in these attacks?
 - e. How long did these attacks last?
18. Think back to the first time you were under enemy attack, what was your initial reaction?
 19. Had you ever thought about being under attack?
 20. Was anything about the experience really different from what you had heard or anticipated?
 21. What was your reaction to being fired upon?
(If questioned - What's it like to know someone's trying to kill you?)
 22. How did those around you react?
 23. As the tour went on, how did people adjust to being fired upon?

Established In The System

24. Now, I'd like to ask about your day-to-day life in the combat zone. What things helped you to get through the tour?

25. Were there things that kept you going when times got tough?

Yes - What were they, if you don't mind?

26. Were there ever times when you just didn't feel like doing your job?

Yes - What did you do?

27. Did you have any additional duties?

Yes - How did you feel about them?

28. Now, I'd like to learn a little more about the unit you were in. How would you rate the cohesion in your unit?

29. Did you have a close association with the unit as a whole?

No - Were there other groups within the unit that you had closer ties with?

Yes - Please explain your relationship.

30. Were there other groups that guys hung out with?

Yes - What was the common bond?

31. Were there any loners?

Yes - Was there anything that made them different from anybody else in the unit?

32. How about the new guys? How were they welcomed into the unit?

33. When did you first really feel part of the group?

34. During your tour, were there any combat losses from your unit?

Yes - a. How did the group react to the losses?

b. How did people respond individually?

The Experience of Combat

35. Now, I'd like to ask some questions about your actual combat experiences. First of all, how well did you feel prepared for combat?

36. Did you receive any military training on what to expect, in combat and how to deal with what you would experience?
37. What aspects of the combat experience would you have liked to have known about before you got there?
38. Was there any particular training you would have liked to have had before you got there?
39. Was there any particular training you received in preparation for your combat tour you found helpful?
40. What was the best advice you were ever given about combat?
41. What was the worst?
42. Among all your combat experiences, choose one and tell me about it.
43. While you were over there, did people think about being wounded, killed or becoming a POW?
44. Did your friends share any thoughts about these concerns?

Yes - How did they feel about them?

No - Were these areas of discussion taboo?

Side Effects of Combat

45. This next portion of the interview deals with the physical effects of combat. Was one day more strenuous than another?

Yes - What was your toughest day like?

46. Did you ever have to go without sleep?

Yes - a. What's the longest you ever had to go without sleep?

b. Did you ever notice any side effects from lack of sleep?

47. What did you do in your free time?

What did you do to relax?

Was boredom ever a problem?

Did you take any leave while you were over there?

Yes - How did you feel about the leave afterwards, was it helpful or not?

48. Were there ever times you saw others not up to the task?

Yes - a. Did this affect how they did their job?

b. How did the other guys feel about it?

c. Was there any time you saw someone overcome by physical or emotional stress to the point they couldn't function?

Yes - a. What happened?

49. Researchers suggest several physical effects of extended combat on an individual. Based on your experience, how often did the following factors occur in your unit?

- | | |
|------------------|-----------------------|
| a. Fatigue | b. Negative attitudes |
| c. Appetite loss | d. Sleep loss |
| e. Depression | f. Alcohol abuse |
| g. Drug abuse | |

50. Did you ever have problems sleeping for any reason?

Yes - What do you feel caused this most often?

51. Were there any discipline problems in the unit?

Yes - a. What kind of discipline problems were they?

b. How were they dealt with?

52. How good was the leadership in your unit?

53. In your experience, you've seen various types of leaders. How would you describe an effective combat leader?

54. Did the antiwar protests and media coverage have any impact on the troops?

55. Is there anything else I ought to be asking people on this subject?

56. Do you know of anyone else I can talk to about Civil Engineering combat experiences in Vietnam?

Appendix B: Data on Participants

Interview Questions 5, 8, 9, 10, 11, 12

	Type Unit	Rank	Age	Job	Main Location	Mo/Yr	Volun teer?
1	BCE	Capt	29	Chief, Ops Br	Ton Son Nhut	Sep 68	No
2	BCE	Capt	26	Chief, Ops Br	Da Nang	Oct 71	No
3	BCE	W-4	41	Deputy BCE	Pleiku	Jun 65	Yes
4	BCE	SSgt	30	Refrig NCOIC	Bien Hoa	Unk 66	No
5	BCE	SSgt	37	Power Production	Phu Cat	Unk 69	Yes
6	BCE	SSgt	26	Refrig NCOIC	Ton Son Nhut	Oct 68	No
7	BCE	Sgt	31	Grounds Maint	Cam Ranh Bay	Nov 67	No
8	BCE	Sgt	27	Production Cntrl	Phan Rang	Nov 71	Yes
9	BCE	A1C	19	Power Production	Ton Son Nhut	Mar 70	Yes
10	BCE	TSgt	30	Asst Fire Chief	Da Nang	Jul 66	Yes
11	BCE	SSgt	33	Fire Crew Chief	Da Nang	May 68	Yes
12	RH	SMSgt	39	Equip Main NCOIC	Phu Cat	Jul 67	Yes
13	RH	TSgt	33	Supply	Tuy Hoa	Unk 65	No
14	RH	SSgt	22	Equip Operator	Phan Rang	Nov 69	Yes
15	RH	SSgt	23	Equip Operator	Cam Ranh Bay	Feb 67	No
16	RH	SSgt	28	Production Cntrl	Phan Rang	Jan 68	No
17	RH	Sgt	29	Carpenter	Bien Hoa	Oct 68	No
18	RH	Sgt	25	Equip Operator	Bien Hoa	Sep 68	Yes
19	RH	Sgt	19	Carpenter	Pleiku	Jul 67	No
20	RH	A2C	23	Carpenter	Cam Ranh Bay	Jan 65	No
21	PB	TSgt	25	Sht Metal NCOIC	Da Nang	Unk 64	Yes
22	PB	A2C	19	Equip Operator	Bien Hoa	Oct 66	Yes
23	7AF	Major	34	Staff Officer	Ton Son Nhut	Jan 70	No
24	Viet	TSgt	36	Train/Inspect	Ton Son Nhut	Aug 69	No

Notes:

1. RH stands for a RED HORSE Squadron.
2. PB stands for a Prime BEEF team.
3. BCE stands for a Base Civil Engineering Squadron.
4. 7AF stands for 7th Air Force Headquarters.
5. Viet stands for the Vietnamization Program.
6. Locations listed were those with which the participants identified with most, not necessarily the base their units were assigned to. Most participants spent time at multiple locations and were exposed to enemy fire at multiple locations.

Appendix C: Description of Enemy Attacks

Interview Questions 17, d, e

Type Unit	Frequency	Length of Attack	Kind of Damage
BCE	6 times.	Couple of minutes.	Holes in runway & major damage to the hospital.
BCE	Once a week.	15 minutes.	Hit the Entomology Shop because it was close to the flightline. Hit barracks, office buildings, and POL.
BCE	Not too much.	A few minutes to 1.5 hours.	Destroyed aircraft. Shot holes in fire trucks and put them out of commission.
BCE	Once a month.	15 to 20 min.	Blew up an 18-wheeler. A lot of equipment destruction. Direct hits on facilities.
BCE	6 times.	5 minutes.	Structural damage to barracks and clubs.
BCE	Twice.	15 to 30 sec.	Blew tires off jeep.
BCE	4 times.	Sometimes all night.	Holes in runways and taxiways. Destroyed hooches.
BCE	Pretty regular.	15 to 60 min.	Extensive damage to runways and Officers' Club.
BCE	Often.	15 minutes.	Some aircraft destroyed. Damage to Passenger Terminal.
BCE DEF	Several times.	Not long, over as quickly as they started.	Occasionally hit barracks, aircraft and runways.
BCE DEF	Every other night	15 to 20 min.	Destroyed C-130's, F-4's, and ammo dump. Holes in runway.

Appendix C, Continued

Type Unit	Frequency	Length of Attack	Kind of Damage
RH	3 times/week.	1.5 to 2 hrs.	Equipment damaged and destroyed. Hooches damaged and destroyed.
RH	Nightly.	10 to 15 min.	Very little. Equipment got holes. Ammo and fuel dumps were hit.
RH	8 times.	5 to 20 min while on convoy. As long as 3 hrs while on base.	Bullet holes in the trucks. Shot out truck windows. Blew mirrors off of truck. Damage to truck radiators. Destroyed buildings and aircraft. Holes in runway. Damage to equipment.
RH	Once a week.	5 to 20 min.	Some aircraft, concrete, and buildings damaged.
RH	3 or 4 times.	15 to 30 min.	Blew up vehicles.
RH	Every 3 or 4 days.	10 min to a couple of hours.	Blew roof off of Finance Bldg. Destroyed Chapel. Outdoor warehouses burned.
RH	Once a week.	5 to 10 min.	Big holes in the runway. Damaged hooches, mostly minor stuff.
RH	Almost every night.	30 to 45 min.	Damaged facilities, bunkers, aircraft, helicopters. Put holes in the runway.
RH	Once.	15 minutes.	Holes in the jeep.
PB	Periodically.	30 min to all night.	Destroyed fuel bladders. Holes in tents.
PB	Sometimes 3 times per day.	5 to 10 min. Sporadically for 8 hrs during Tet.	Vehicles took rounds during convoys. Barracks took direct hits on base.

Appendix C, Continued

Type Unit	Frequency	Length of Attack	Kind of Damage
7AF	6 times.	30 to 45 min.	Not much damage during convoys. Destroyed air traffic control tower, aircraft, airfield pavements, and buildings on base.
Viet	15 times.	It varied.	Destroyed hooches. Damaged latrines. Knocked down parts of dorms.

Appendix D: Return of Hostile Fire

Interview Questions 17b and 17c

Type Unit	Rank	Comments
BCE	Capt	No one returned fire.
BCE	Capt	Did not returned fire. Army protected the base.
BCE	W-4	Did not returned fire. Army protected the base.
BCE	SSgt	Personally returned fire with a handgun when a convoy was attacked. He knows he shot two Viet Cong soldiers. Army also provided protection.
BCE	SSgt	No one returned fire.
BCE	SSgt	Personally returned fire with an M-16 when attacked on a road.
BCE	Sgt	No one returned fire.
BCE	Sgt	Did not returned fire. Korean Army protected base.
BCE	A1C	No one returned fire.
BCE DEF	TSgt	Personally returned fire with an M-16. He went on patrols with the 1041st USAF Combat Security Police Squadron because he could speak Vietnamese. The 1041st protected the base.
BCE DEF	SSgt	Did not returned fire. Return fire was provided by AC-47 gunships.
RH	SMSGt	Did not returned fire. Return fire was provided by Army Cobra helicopters and by the Korean Army.
RH	TSgt	Personally returned fire with an M-16. Was an SP augmentee.
RH	SSgt	Personally returned fire with an M-16. Was attacked during convoys and performed perimeter duty as an SP augmentee.

Appendix D, Continued

Type Unit	Rank	Comments
RH	SSgt	No one returned fire. However, he was an SP augmentee.
RH	SSgt	Personally returned fire with an M-16 when a convoy was attacked. Korean Army helped during that attack.
RH	Sgt	Personally returned fire with an M-16, M-60, M-79 grenade launcher, and 40 mm. Routinely manned the perimeter during attacks. Also had protection from the Army.
RH	Sgt	Did not returned fire. The Army protected the base.
RH	Sgt	Personally returned fire with an M-16 when the enemy tried to overrun the base and when convoy was attacked.
RH	A2C	No one returned fire.
PB	TSgt	Personally returned fire with an M-16 when the enemy tried to overrun the base.
PB	A2C	Did not return fire. Security Police protected the base.
7AF	Major	Did not return fire. The Korean Army provided protection.
Viet	TSgt	No one returned fire. There was nothing to shoot at.

Appendix E: Bonding With the Unit

Interview Questions 28 and 29

Type Unit	Rank	Unit Cohesion	Close to Unit as a Whole?
BCE	Capt	Tops. A "10!"	Yes. Job involved great interaction with a large part of the Squadron.
BCE	Capt	Pretty good.	Yes. They had a bond. He still keeps in touch with some of the people.
BCE	W-4	Terrific.	Yes. Everyone stuck together. He spent time with the troops and put himself in the same dangerous situations they were in.
BCE	SSgt	Very good.	Yes. Got close to coworkers, even those from other shops. Good and helpful people throughout the Squadron.
BCE	SSgt	Pretty good.	No. Felt close to coworkers only.
BCE	SSgt	Excellent.	Yes. Everyone was tight. People worked together.
BCE	Sgt	Pretty good.	Yes. Squadron had esprit de corps and he had friends in the Squadron.
BCE	Sgt	Good.	Yes. Good morale. Job involved regular interaction with the entire Squadron. He related to people who were going through the same thing.
BCE	A1C	Good.	No. Close to Shop; not close to Squadron.
BCE DEF	TSgt	Alright. It was different.	No. Close to Fire Dept; Not close to Squadron.

Appendix E, Continued

Type Unit	Rank	Unit Cohesion	Close to Unit as a Whole?
BCE DEF	SSgt	Very good.	Yes. Entire Squadron pulled together. Good harmony with the Fire Dept and entire Squadron. It felt like home.
RH	SMSgt	Excellent. Best ever seen.	Yes. Having everything in one Squadron helped (Medics, Supply, etc.). They all ate and slept together.
RH	TSgt	Wonderful. 100%.	Yes. Job involved interaction with the entire Squadron. People worked together. He was able to get grenades and sidearms for everyone and ice machines.
RH	SSgt	100%. It couldn't get any better.	Yes. People did things other than what their AFSC's called for. This gave him interaction with the entire Squadron.
RH	SSgt	Good.	Yes. Commander got out with the people. He cared and wanted to take care of the people. It gave them something to look forward to.
RH	SSgt	Pretty good.	Yes. Everybody helped each other and got along with everybody.
RH	Sgt	Best "Damn" outfit he was ever in.	Yes. Everybody looked out for everybody; no discrimination. Commander was best ever seen. They couldn't do enough for him.
RH	Sgt	Very good.	Yes. Everyone got along well. They had parties.

Appendix E, Continued

Type Unit	Rank	Unit Cohesion	Close to Unit as a Whole?
RH	Sgt	Real good.	Yes. Everyone got along real well.
RH	A2C	Poor.	No. Communication was poor.
PB	TSgt	Excellent.	Yes. Had people to talk to about similarities like family, career experiences, etc.
PB	A2C	Very cohesive.	Yes. Team worked good together and everyone was concerned about everyone else. He was proud to be part of the unit.
7AF	Major	Above average.	Yes. They had a mission and he worked hard with peers.
Viet	TSgt	Very good.	Yes. Officers were not rank conscious. Everyone worked well together. They went on missions together.

Appendix F: Quality of Unit Leadership

Interview Question 52

Type Unit	Rank	Unit Leadership	Further Comments
BCE	Capt	Excellent.	None.
BCE	Capt	Pretty good.	Could have been better.
BCE	W-4	The first CC was not good, but the second one was.	The first one had a drinking problem.
BCE	SSgt	Very good.	The idea of "I'm an officer and you're enlisted" never came up.
BCE	SSgt	Average.	Respondent relied more on NCO's than on officers.
BCE	SSgt	Fair.	Poor CC and poor superintendent, but all other leaders were good.
BCE	Sgt	Average.	None.
BCE	Sgt	Excellent.	Officers were not rank conscious. CC was not quick to reprimand or to discipline personnel.
BCE	A1C	Good.	Some shops got more attention from the CC than others. NCO's provided most of the leadership.
BCE DEF	TSgt	Fire Dept's was great. The rest of Squadron's leadership was invisible.	If everything was okay, they never saw any of the officers.
BCE DEF	SSgt	Lousy in Fire Dept. Rest of Squadron was outstanding.	None.

Appendix F, Continued

Type Unit	Rank	Unit Leadership	Further Comments
RH	SMSgt	Outstanding.	None.
RH	TSgt	Outstanding.	Best he ever saw during Air Force career.
RH	SSgt	Excellent.	None.
RH	SSgt	Real good.	Marvelous commander.
RH	SSgt	An 8 on a scale of 10.	None.
RH	Sgt	Greatest ever seen.	No vacillating. What was said, got done. He was right there with the guys.
RH	Sgt	Great.	Everyone in leadership positions were fine.
RH	Sgt	Real good.	None.
RH	A2C	Very poor.	Never saw the commander. He was preoccupied with other things. No communication from the top. NCO's did not have the knowledge needed to do their jobs.
PB	TSgt	The same as stateside. We had good and bad.	If he could do it in the states, he could do it in Vietnam.
PB	A2C	Excellent.	None.
7AF	Major	Very poor.	It was not a problem because personnel were self-motivated. The head guy's subordinates were better leaders and they filled his void.
Viet	TSgt	Excellent.	None.

Appendix G: Traits of Effective Combat Leaders

Interview Question 53

Type Unit	Rank	Traits
BCE	Capt	Someone who can butt heads with other Colonels.
BCE	Capt	Doesn't worry about details of paperwork and takes care of his people. Takes care of their real needs like a place to sleep and good food. Does only real work, not just things to pretty the place up.
BCE	W-4	A lot of training in how to survive in that environment (climate and combat) because the enemy hid and waited for them.
BCE	SSgt	Not afraid to ask for help from enlisted personnel. Not dogmatic, but able to be decisive and cool headed because decisions are questioned if the leader is not cool headed.
BCE	SSgt	Would never ask someone to do something he wouldn't do himself. Someone you can respect as a man and because of his job.
BCE	SSgt	Did not have an answer.
BCE	Sgt	Be above everybody else and ready to lead in any situation. Have "can do, will do" attitude. Must be positive. Should get to know all his men and associate with them.
BCE	Sgt	Knows everyone in the unit. Show concern for everyone and treat people individually. Do not issue "blanket orders" because things must be looked at individually. Everyone has different capabilities.
BCE	ALC	Can understand the situation. Can take charge and not panic. Uses resources to the best of his ability.
BCE DEF	TSgt	Shows interest in what is happening around him. He cannot sit behind a desk.

Appendix G, Continued

Type Unit	Rank	Traits
BCE	SSgt	Knows the good and bad about his troops. DEF Knows how to assess people. Stands up and says "follow me". Not afraid to do what his troops do. Backs his troops. Has same rules for himself as the troops have.
RH	SMSgt	Thinks of his men first. Thinks of their welfare. Ensures the troops have a decent place to work, sleep, and eat. Stays off the troops backs and lets them do their jobs. Not a coward, a man, a stable force. Leaves the petty stuff from stateside back at stateside.
RH	TSgt	Has to be fair and understanding. Must be a leader. Cannot show fear. Must be able to go out first.
RH	SSgt	Knows the intelligence reports and informs the troops of what to expect while they are working and convoying. Looks after his people. Ensures that equipment and vehicles are maintained as well as possible.
RH	SSgt	An individual who thinks about the safety and welfare of his troops before himself.
RH	SSgt	Really knows his people. Must overlook nit- picky crap. Must treat people as individuals. Can not treat people as if everyone is the same.
RH	Sgt	Takes the bull by the horn. A positive person. Thinks things out and does not act on the spur of the moment. Has a sense of fairness.
RH	Sgt	Has relevant experience.
RH	Sgt	Listens to his NCO's because they usually know what's right and what should be done.
RH	A2C	Aware of what's going on. Keeps troops informed of what to expect.

Appendix G, Continued

Type Unit	Rank	Traits
PB	TSgt	Uses his head and deals with people with a cool head. Knows what to do. Trains people. Keeps people calm.
PB	A2C	Ensures that he and his people have proper training. Knows how to deal with people.
7AF	Major	Is sure of himself. Is caring of his people and genuinely shows it. Is decisive. Is very knowledgeable of the combat functions of his unit (knows the technical things). Has a sense of humor and the ability to relieve tension.
Viet	TSgt	Is respectful of his troops and their abilities. Is cool and understanding. Is sympathetic of the needs of the troops. Not a wimp. Is level headed and intelligent. Is trustable and believable. Doesn't treat troops like numbers.

Appendix H: Comparison of Unit Cohesion and Leadership
Interview Questions 28 and 52

Type Unit	Rank	Unit Cohesion	Unit Leadership
BCE	Capt	Tops. A "10!"	Excellent.
BCE	Capt	Pretty good.	Pretty good.
BCE	W-4	Terrific	The first CC was not good, buy the second one was.
BCE	SSgt	Very good.	Very good.
BCE	SSgt	Pretty good.	Average.
BCE	SSgt	Excellent.	Fair.
BCE	Sgt	Pretty good.	Average.
BCE	Sgt	Good.	Excellent.
BCE	A1C	Good.	Good.
BCE DEF	TSgt	Alright. It was different.	Fire Dept's was great. The rest of Squadron's leadership was invisible.
BCE DEF	SSgt	Very good.	Lousy in Fire Dept. The leadership in rest of the Squadron was outstanding.
RH	SMSgt	Excellent. Best ever seen.	Outstanding
RH	TSgt	Wonderful. 100%.	Outstanding.
RH	SSgt	100%. It couldn't get any better.	Excellent.
RH	SSgt	Good.	Real good.
RH	SSgt	Pretty good.	An 8 on a scale of 10.
PH	Sgt	Best "Damn" outfit he was ever in.	Greatest ever seen.

Appendix H, Continued

Type Unit	Rank	Unit Cohesion	Unit Leadership
RH	Sgt	Very good.	Great.
RH	Sgt	Real good.	Real good.
RH	A2C	Poor.	Very poor.
PB	TSgt	Excellent.	The same as stateside. They had good and bad.
PB	A2C	Very cohesive.	Excellent.
7AF	Major	Above average.	Very poor.
Viet	TSgt	Very good.	Excellent.

Appendix I: Helpful Factors In The Combat Zone

Interview Questions 24 and 25

Type Unit	Rank	Comments
BCE	Capt	Staying busy at work. Religion.
BCE	Capt	The biggest factor was the camaraderie within the Squadron. Other factors were decent living quarters, good food, letters from home, and sleep.
BCE	W-4	Letters from home. Good food. Knowledge that he would be going home after one year. Camaraderie within the Squadron.
BCE	SSgt	Concentration on his job. Did volunteer work at a local Orphanage (worked with kids and helped with construction). Close friendships ("as close as guys can get"). He saw a lot of body bags, but he didn't dwell on it.
BCE	SSgt	The old guys helped the young guys. Recreation time (including softball) with the guys he was friendly with. They "worked hard and played hard".
BCE	SSgt	Thought about home. Thought about becoming closer to eligible to take leave. Telephone calls to wife.
BCE	Sgt	Did volunteer work at an Orphanage with the Chaplain. Fishing and boating.
BCE	Sgt	Became regimented and didn't waste time. Exercised a lot and did a lot of thinking. He felt like he was going to be one of the guys going home someday. He had a wife waiting who was a driving force. Relatives wrote letters. One brother who was in Vietnam before him wrote letters and conveyed coping skills needed in that environment. Stopped drinking so that he could be alert at all times. Spent time as a member of the American Minorities Organization and eventually became their librarian. Religious beliefs.

Appendix I, Continued

Type Unit	Rank	Comments
BCE	AlC	Stayed busy with work, even on days off. Went sightseeing in Saigon whenever possible. Went to the Clubs and participated in sports. He and his friends supported each other. He knew he would be going home someday.
BCE DEF	TSgt	Ran a lot. Sent and received tape recorded letters to and from his family. The idea of getting closer and closer to his DEROS.
BCE DEF	SSgt	Went to China Beach. Good food, theaters, snack bars, the BX. Sent and received tape recorded letters from home. Got comfort from knowledge that it could be worse (like the Army and Marines). Gritted teeth and told himself, "this is combat".
RH	SMSgt	Belief in God (Christianity) convinced him that things would be okay. Thoughts of his family at home. RED HORSE camaraderie. Well trained personnel. Had a bed and decent food.
RH	TSgt	Work, mail, and dedication to his job and the mission.
RH	SSgt	Letters and "CARE" packages from home. The ability to mail things at no cost. USO shows. Excellent food. Squadron CC looked out for them. Made a mental adjustment after arrival to "make the best of it". Got pleasure from seeing jobs completed so quickly and so well. This caused an internal drive.
RH	SSgt	Letters from home. Knowledge that his family was okay. Knowledge that his family cared about him. Knew they had a job to do. Kept his mind occupied by doing CDC's and going to the library so that he wouldn't worry. Had to give himself a good talking to. There was no sense feeling sorry for himself because thousands of other people were there going through the same things.
RH	SSgt	Counted days and knew that he would eventually go home. Doing his job.

Appendix I, Continued

Type Unit	Rank	Comments
RH	Sgt	Hoping that he would get out alive and taking one day at a time. Stayed busy during nonduty hours. Attended Church. "Grin and bear it!"
RH	Sgt	Letters from his family and thoughts of his family. Knowledge that his family was okay.
RH	Sgt	Going to town and drinking. Letters from home.
RH	A2C	Camaraderie. Knowledge that he would go home someday. Letters from home.
PB	TSgt	Stayed busy. Letters from home. Knowledge that his family was okay and was being taken care of. Belief in "the good Lord was most stabilizing".
PB	A2C	They "worked hard and played hard". Looked forward to off-duty hours. Went to NCO Club, to town, and to movies. Wrote letters. Knew that time in Vietnam was beneficial to his career. Personal satisfaction of a job well done. During the time America supported the war, that was a good feeling. Religious beliefs.
7AF	Major	Religion. Desire to get home to his family. Pride in the work accomplished as result of his involvement with the Improvement and Modernization Program and because of the aid given to the Vietnamese because of his job.
Viet	TSgt	Felt that he was contributing something for his country. Felt good about himself. Knowledge that he would be going home someday.

Appendix J: Perception of Biggest Problem

Interview Question 15

Type Unit	Rank	Comments
BCE	Capt	Theft. Knowledge that some of the Vietnamese laborers on the base were VC. Weather, especially the monsoons because of the impact on construction.
BCE	Capt	Short notice taskings. Improperly trained personnel. Supervisors were unable to "deal with" people. Getting material to get the job done.
BCE	W-4	Getting "ground pounders" (Army or Marines) to protect them. Became a "team" after they arrived. Enemy attacks. Food was hard to obtain. Materials were hard to obtain.
BCE	SSgt	Not prepared for the total involvement of the environment (combat and climate). Inability to psychologically adjust to the situations (Vietnamese laborers on the base being VC, being shot at, etc.). Supplies and tools were inadequate.
BCE	SSgt	Worrying about when and how the next attack might come. Never had briefings on what to expect. Wasn't prepared for what happened. Lack of parts.
BCE	SSgt	Young officers who didn't know what they were doing. Lt's tried to dictate everything, rather than letting the NCO's handle things. Lack of parts. Lack of multiskilled craftsmen.
BCE	Sgt	Rusted and corroded weapons which caused malfunctions. Lack of combat training.
BCE	Sgt	Lack of proper combat training. Language barrier. NCO's without leadership abilities.
BCE	A1C	Being shot at. Personal protection. Lack of proper training in combat tactics and weapons handling. Unfamiliar with the combat environment (terrain, climate, etc.).

Appendix J, Continued

Type Unit	Rank	Comments
BCE DEF	TSgt	Lots of small fires caused by personnel who modified their facilities. The modifications made the facilities highly flammable. Lack of spare parts for vehicles.
BCE DEF	SSgt	Firefighters who were unprotected while fighting fires. Unfamiliar with sights and sounds of enemy weapons. Unfamiliar with capabilities of U.S. weapons and protective gear.
RH	SMSgt	The flying guys did not understand the complexities of CE business. They viewed vehicle and equipment problems as "excuses" for not getting the job done. Spare parts support was inadequate. Stresses and strains of the combat environment. Wasn't prepared for long duty hours and the climate.
RH	TSgt	Feelings of insecurity between attacks because weapons were taken away from them until the attacks came.
RH	SSgt	Old equipment. Limited spare parts. The lead time for parts was too long. Short deadlines.
RH	SSgt	Not getting right equipment and tools needed. Not able to see or talk to his family. Lack of proper training and skills required to do the job before they got there (stateside operations caused this via civilians, etc.).
RH	SSgt	People got shook up and didn't know what to do when convoys were ambushed. Didn't know what to do if the base had been overrun. Didn't know how to handle weapons.
RH	Sgt	Lack of proper combat training. They needed the kind of training that heavy infantry gets: APC's, demolition, explosives, etc.
RH	Sgt	Getting shot at.
RH	Sgt	This respondent could not provide an answer because everything went well.

Appendix J, Continued

Type Unit	Rank	Comments
RH	A2C	Lack of combat experience and combat training.
PB	TSgt	Language barrier. Not enough Americans to do the job. Inexperienced Airmen and NCO's became supervisors. Vietnamese laborers were inexperienced and unskilled. Lack of construction expertise; troops had only maintenance and repair experience. CE troops are not trained to build a base from the ground up.
PB	A2C	Lack of motivated people. Lack of proper equipment and materials. Lack of proper training (combat and trade).
7AF	Major	Peacetime process for acquiring materials by contract and doing work by contract is obsolete during war. Lack of combat training and orientation of what to expect in a combat environment. The supply pipeline was too long.
Viet	TSgt	Inadequate logistical support. Language barrier. Inadequate indoctrination of what to expect.

Appendix K: Recommendations for Combat Preparation

Interview Question 16

Type Unit	Rank	Recommendations
BCE	Capt	This respondent did not have an answer.
BCE	Capt	Make sure troops are properly trained in their AFSC's. Make sure NCO's and officers know how to handle people.
BCE	W-4	Have troops work as a team before they deploy and then let them deploy as a team.
BCE	SSgt	Expose the troops to simulation-type scenarios (as realistic as possible), including extreme weather conditions.
BCE	SSgt	Have an indoctrination program on what to expect (before troops deploy) and explain, as much as possible, about their job and what the environment will be like.
BCE	SSgt	Need to have multiskilled craftsmen.
BCE	Sgt	Combat-type training.
BCE	Sgt	More extensive Prime BEEF training so that troops can be better prepared mentally. Make sure NCO's have attended Leadership School.
BCE	A1C	Establish, at Tech Schools, classes in weapons and familiarization with the combat environment (terrain, weapons, climate, etc.)
BCE DEF	TSgt	Rely on experiences of people who were there to prepare (mentally and physically) those who will go.
BCE DEF	SSgt	Better training before going. Show people what bombs look like and sound like (mortars, rockets). Should be able to disassemble and assemble an M-16 in the dark. Show what a flak jacket and helmet can do. Full range of M-16 training (semi-automatic and automatic). Full combat training.
RH	SMSgt	Indoctrination that covers preparation for 16 hour days and the climate.

Appendix K, Continued

Type Unit	Rank	Recommendations
RH	TSgt	Have people who were in combat talk to and train the troops before they go.
RH	SSgt	RED HORSE-like training for everyone.
RH	SSgt	Have hands on experience and know about the equipment and materials before they arrive.
RH	SSgt	Give RED HORSE additional combat training. They need the kind of training the Army and Marines get.
RH	Sgt	Get rid of Prime BEEF and have nothing but RED HORSE Squadrons and make all of the training more intense.
RH	Sgt	Reactivate all of the RED HORSE Squadrons.
RH	Sgt	This respondent could not provide an answer because everything went so well during his tour.
RH	A2C	This respondent was unable to provide an answer.
PB	TSgt	Provide hands on training of an extended duration. Send the team to an isolated location and have them construct a base from the ground up. Ask troops to do things rather than telling them. Make the troops feel like they are somebody. Make sure everyone has proper training and that NCO's and officers know how to manage.
PB	A2C	Send everyone to RED HORSE schools. Send those who need the training to schools conducted by the other Services (combat training, equipment training, etc.).
7AF	Major	Education and training. Establish a combat support complex and train people in their specialties in a combat environment. Then, train them in an integrative fashion with other AFSC's (Supply, Transportation, Medics, Ops, etc) because troops must be trained to respond to combat as an "integrated base".

Appendix K, Continued

Type Unit	Rank	Recommendations
Viet	TSgt	Language training prior to going. Indoctrination by people who had been there. Realistic instruction of what to expect.

Appendix L: Desired Training

Interview Questions 37 and 38

Type Unit	Rank	Comments
BCE	Capt	Training in asphalt and concrete paving. Training on how to work in that environment (combat and climate).
BCE	Capt	How to work with people and how to handle a large group of people that you work closely with, day after day. Combat training (what to do in a fire fight, etc.) and Rapid Runway Repair ("triple R"). How to do emergency repairs to facilities (pipes, electricity, etc.). What mental things to expect.
BCE	W-4	How to recognize and deal with booby traps.
BCE	SSgt	Preparation for the psychological stress, including instructions on how the locals feel about the U.S., where the safe zones are (if any exist), etc. Indoctrination conducted by people who have been there.
BCE	SSgt	Training on how to stay alive and safety procedures. Security Police training (meaning perimeter and combat training).
BCE	SSgt	Training that produces multiskilled craftsmen.
BCE	Sgt	Intense training with the M-16 and combat training.
BCE	Sgt	Information on the types of jobs the troops will be doing, including SP augmentee duty. Combat training like the Army and Marines get. Prime BEEF training of an extended duration (deployment and employment exercises that last more than one day).
BCE	A1C	How to survive an attack. How to spot the enemy and booby traps. Survival training. How to travel the roads safely (during convoys and nonduty hours).

Appendix L, Continued

Type Unit	Rank	Comments
BCE DEF	TSgt	Information containing the facts and figures of all units previously deployed, including experiences they had and how they dealt with them, number of IFE's crashes, fires, etc. More intense M-16 training. How to deal with the situations to be encountered (mentally and physically).
BCE DEF	SSgt	Training from people who have been there to prepare the troops for what they will experience and how to survive in a combat environment. Let troops see and hear the sights and sounds of incoming rounds (small arms, mortars, rockets). Expose troops to gunships and their possible dangers. Combat training. Extended M-16 and revolver training until the individual is comfortable with weapons.
RH	SMSgt	Training on the difference between offensive and defensive combat tactics. More combat training than RED HORSE got. What to expect from the local people. How to deal with mundane (meaning that these things caused boredom) things like taking salt tablets daily, personal hygiene, etc.
RH	TSgt	This respondent did not have an answer because he thought he and his Squadron were totally ready when they got there.
RH	SSgt	Escape and evasion, especially for those who have convoy duty. Extensive weapons training, including "combat firing" more than once a year. RED HORSE-like training for everyone.
RH	SSgt	This respondent did not have an answer because he thinks it is impossible to prepare someone for combat and he thought he was adequately trained before he got there.
RH	SSgt	Advanced maneuvers to simulate the chaos and the noise during an attack. Training from people who have been there on how to adjust to the culture and how to adjust to the living conditions (tents, rudimentary latrines, the food, etc.).

Appendix L, Continued

Type Unit	Rank	Comments
RH	Sgt	How fast can I dig a foxhole? Extensive weapons training, including mortars. Training on APC's and heavy tracked vehicles.
RH	Sgt	This respondent did not have an answer because he thought his prior Army training prepared him well.
RH	Sgt	RED HORSE-like training for everyone.
RH	A2C	Good, extensive combat training that is exercised regularly.
PB	TSgt	How to handle being overrun and what to do as a POW.
PB	A2C	How to build protective bunkers.
7AF	Major	Perimeter and work party security. Explanation of what fields of fire are and how to establish them. How to establish outposts and fall back positions. Explanation of what it takes to protect people and facilities from different kinds of weapons (small arms, mortars, rockets, etc.). Explanation of construction types needed to stop shrapnel. Everyone should have at least the kind of training that RED HORSE gets.
Viet	TSgt	Indoctrination about how locals feel about the U.S. Training in the local language. Emotional and psychological preparations.

Appendix M: Initial Reaction to Hostile Fire

Interview Question 18

Type Unit	Rank	Response
BCE	Capt	Ran for cover.
BCE	Capt	Wondered what was going on. Couldn't believe a CE building was hit.
BCE	W-4	Dropped to ground and looked for his M-16 because it was an ambush.
BCE	SSgt	Scared to death, but able to find a bunker.
BCE	SSgt	Got under a bed and put a mattress on top of him.
BCE	SSgt	Jumped out of the jeep and didn't know what was going on.
BCE	Sgt	Fear.
BCE	Sgt	Got on the floor.
BCE	A1C	Scared.
BCE DEF	TSgt	Scared as "hell" and didn't know what was going on.
BCE DEF	SSgt	Got under bunk, then ran to a bunker. Excited, confused, and scared.
RH	SMSgt	Scared to death, but functioned well (WWII experience). Acted maturely and lead other troops to a bunker during an attack (Vietnam experience).
RH	TSgt	Hit the deck.
RH	SSgt	Shock, startled, then responded because of RED HORSE training.
RH	SSgt	He was scared.
RH	SSgt	Acted out of instinct and returned fire.
RH	Sgt	Started running toward a bunker. Was scared and didn't know what to expect.

Appendix M, Continued

Type Unit	Rank	Response
RH	Sgt	Scared and ran for cover.
RH	Sgt	Scared.
RH	A2C	Scared to death.
PB	TSgt	Got under cover.
PB	A2C	Shocked and afraid.
7AF	Major	Got under something for protection.
Viet	TSgt	Surprised at how loud it was and got down low.

Appendix N: Training and Perceptions of Preparedness

Interview Questions 3, 35 and 36

Type Unit	Rank	Pre-Vietnam Training	Feel Prepared For Combat?
BCE	Capt	Bare base training (latrines, surveying, etc.), Arctic survival.	No, not too well prepared.
BCE	Capt	OTS and AFIT sponsored Master's Degree.	No. It would have been a joke if he had ever been in a fire fight.
BCE	W-4	Gunner training during WWII. Fire-fighter training.	Yes. Felt confident because he studied Army tactics via correspondence during WWII, because he was a hunter, and because he had survival training.
BCE	SSgt	Air conditioning/refrigeration Tech Schools. Arctic, desert, and jungle survival. Some combat training.	No. Thought he was prepared until it happened. Definitely not psychologically prepared.
BCE	SSgt	Basic, Tech Schools, and correspondence courses.	No. He would have felt prepared if he would have had a gun.
BCE	SSgt	Basic, Tech Schools, and OJT.	Yes. Minimally prepared due to augmentee trained he received after he got there. Augmentee training was not great.
BCE	Sgt	Basic and OJT.	No. Knew they weren't ready because they were not properly trained.
BCE	Sgt	Basic and Tech Schools.	No. Totally unprepared.

Appendix N, Continued

Type Unit	Rank	Pre-Vietnam Training	Feel Prepared For Combat?
BCE	A1C	Basic, Power Production Tech Schools, specialized training on barriers and generators, and a short course on M-16's, M-60's, and grenades.	No, not prepared. The AF did not give a "Damn" about combat training for support people.
BCE DEF	TSgt	Basic, Tech School, and Language School.	No. He didn't have the necessary experience for being in a combat zone.
BCE	SSgt	Basic, Crash/Fire/Rescue, other DEF training, and some weapons training.	No. Did not feel DEF prepared.
RH	SMSgt	Heavy Equipment and diesel repair and RED HORSE combat training.	Yes, very well.
RH	TSgt	Basic, Supply training and RED HORSE combat training.	Yes, felt prepared.
RH	SSgt	Basic, OJT, NCO Academy, Leadership School, and RED HORSE combat training.	Yes, well prepared.
RH	SSgt	Basic, OJT, and RED HORSE combat training.	No. Doesn't think anybody is ever really ready.
RH	SSgt	Marine and RED HORSE combat training, and Production Control Tech School.	Yes, figured he was better prepared than others because of Marine training.
RH	Sgt	Basic, Carpentry Tech School, and RED HORSE combat training.	Training was good; no no one can be prepared for being killed at anytime. There's no way to prepare for the unexpected.

Appendix N, Continued

Type Unit	Rank	Pre-Vietnam Training	Feel Prepared For Combat?
RH	Sgt	Army and AF Basic, Heavy Equipment, and Army combat training.	Yes. Felt very prepared because of Army combat training.
RH	Sgt	Basic and RED HORSE combat training.	Respondent did not answer this question.
RH	A2C	Army and AF Basic, Carpentry Tech School. Infantry, Advanced Infantry, and Jump School from the Army.	No, not at all. He received Army training when he was 15 years old. Did not have RED HORSE training.
PB	TSgt	Basic, OJT, and First Aid and Buddy Care.	Yes. He grew up in the country and he grew up hunting. He was comfortable with weapons and the terrain.
PB	A2C	Basic, M-16, M-60, M-79, and protection of work parties.	Yes. Felt very prepared.
7AF	Major	ROTC	No, not well at all.
Viet	TSgt	Basic, Airborne radio operator, surveying, site development, Power Production, and Automotive Maintenance.	Yes, felt well prepared.

Appendix O: Boredom and Leave

Interview Question 47

Type Unit	Rank	Was boredom a problem?	Take any Leave or R&R?	Was the leave Helpful?
BCE	Capt	No	Yes	Yes. Good to get away.
BCE	Capt	No	yes	No. Wife became ill and had to leave her in a hospital in Hawaii.
BCE	W-4	No	No	
BCE	SSgt	No	Yes	Yes. A reprieve from "hell".
BCE	SSgt	Yes	Yes	No. Too much paperwork and bureaucracy going back and forth made the trip miserable.
BCE	SSgt	No	Yes	Yes, but minimally.
BCE	Sgt	No	Yes	Yes
BCE	Sgt	Yes	Yes	Yes, very helpful. He didn't want to go back.
BCE	A1C	Yes	Yes	Yes, very helpful.
BCE DEF	TSgt	No	Yes	Yes. It was as if he had never gone to Vietnam and he wasn't too pleased to go back.
BCE DEF	SSgt	No	Yes	Yes
RH	SMSgt	Yes	Yes	No, wished he hadn't gone.

Appendix O, Continued

Type Unit	Rank	Was boredom a problem?	Take any Leave or R&R?	Was the leave Helpful?
RH	TSgt	No	Yes	Yes
RH	SSgt	No	No	
RH	SSgt	Yes	No	
RH	SSgt	No	No	
RH	Sgt	No	No	
RH	Sgt	No	Yes	Yes
RH	Sgt	No	No	
RH	A2C	No	Yes	Yes, very helpful.
PB	TSgt	No	Yes	Yes, great to get away from the pressure. It made a big difference.
PB	A2C	NO	Yes	Yes, good to get away for awhile.
7AF	Major	No	Yes	Yes, it was tough to go back.
Viet	TSgt	NO	Yes	No, bad thing was knowing that he had to go back. Would have been better if he hadn't gone. More stressful to go back and very traumatic.

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13. ABSTRACT (Maximum 200 words) This thesis was a replication and an expansion of the thesis done by Captain Gary E. Lauson (1989). It was designed to identify significant aspects of the combat experiences of Air Force Civil Engineering (AFCE) personnel in Vietnam and to add respondents to the database originated by Captain Lauson. Due to a lack of previous research on Air Force ground combat experiences, Captain Lauson's thesis and this thesis required the collection of original data. A 56-question structured interview, created by Captain Lauson, was used to interview 24 AFCE Vietnam veterans about their combat experiences. Research results describe the Vietnam combat experience as seen through the eyes of AFCE veterans. Tentative conclusions are offered on the problems encountered by AFCE personnel in Vietnam as well as how AFCE personnel could have been better prepared for the combat they experienced. The problems and the recommendations provided by the respondents are discussed in hopes that the Civil Engineering community can learn from the past via the experiences of personnel who worked and lived in a combat environment. This thesis was phase two of a program of research in the area of combat behavior and recommendations are made for research for phase three. <i>Keywords:</i>				
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