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CIVIL ENGINEERING PRIME BEEF CONTINGENCY
TRAINING—PREPARATION FOR THE SPECTRUM OF
OPERATIONS

A Research Paper

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Preface

With the breakup of the Soviet Union and Warsaw Pact, the role of military forces worldwide is drastically changing. The new security environment is characterized by no single enemy against which to focus planning and forces, shrinking defense budgets, and rapid changes in technology. This has required military professionals to reexamine their service roles, missions, and doctrine. While these items are still unresolved, the emerging security environment has demanded military forces be used in nontypical roles. The question arises—are United States military forces adequately trained to conduct operations across the full spectrum of conflict, from war to Military Operations Other Than War (MOOTW)?

Of specific concern is readiness of Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) teams for their roles in supporting operations across the full spectrum of conflict. The AFCE mission is to:

Provide, operate, maintain, restore, and protect the installations, infrastructure, facilities, housing, and environment necessary to support air and space forces having global reach and global power, across the range of military operations.¹

The broad nature of this mission lends itself to two statements. First, the role AFCE Prime BEEF teams perform across the spectrum of conflict is consistent. Second, that current AFCE contingency training geared toward preparing AFCE Prime BEEF forces for war, is sufficient to prepare these forces for operations across the full spectrum of conflict. This study attempts to validate these statements.

Air bases are a determining factor in the success of air operations. The two-legged stool of men and planes would topple over without this equally important third leg.

—General Henry H. “Hap” Arnold (1940)

The role of AFCE forces, obtaining air base operability and sustainability, is vital to the successful application of airpower. So vital, that shortfalls in their readiness to support operations across the full spectrum of conflict could have grave results. These results could be on a tactical, operational, or strategic level.²

I greatly appreciate the contributions of several individuals. Colonel John Jeffreys, Chief, Readiness Division, Headquarters, Air Combat Command and Mr. Joe Smith, AFCE Readiness Training Manager, Headquarters, Air Force Civil Engineer Support Agency for helping me define and direct this study. Dr. Ron Hartzler, AFCE Historian, Headquarters, Air Force Civil Engineer Support Agency, for providing insight and articles of previous works in this area. And Major Bob Fant, Faculty Research Advisor, Air Command and Staff College, for constant direction, encouragement, and friendship.

Of course, I cannot forget the dedication and sacrifice that my family has displayed over this trying and frustrating year. Karen, Ben, Karl, and Georgia—I greatly appreciate your unconditional love and prayers. Finally to my Lord and Savior, Jesus Christ, who has directed my career for over fourteen years. I thank you for everything you have provided me and I rest assured each day you have prepared me fully for the next day’s challenges. I will continue to follow your will for the rest of my life.

Abstract

Air Force Doctrine Document (AFDD) 42, Civil Engineer doctrine, states the capability of a nation's Air Force is determined not only by the weapon system and weapon support system, but also by the basing system.³ The basing system "includes infrastructure, people, materiel, and information needed to sustain the weapons system and the weapons support system."⁴ Thus, people, specifically the training proficiency of those people, is a critical element in determining the Air Force's capability.

With the breakup of the Soviet Union and Warsaw Pact, the strategic environment has changed so dramatically the United States military is no longer facing a single enemy. Many individuals also consider the United States the world's only remaining superpower.⁵ Thus, US military forces are being deployed with greater frequency to support operations short of war, known as Military Operations Other Than War (MOOTW).

When determining the Air Force's capability to support operations across the full spectrum of conflict, from war to MOOTW, the training proficiency of those forces is important. Of vital concern is the training proficiency of Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) personnel. This study attempts to answer three questions regarding training proficiency of AFCE Prime BEEF personnel. These are:

1. Are tasks they perform different across the full spectrum of conflict?
2. Is current contingency training adequately preparing them to perform taskings across the full spectrum of conflict?

3. If the training is not adequate, what suggestions can improve this training so they are adequately prepared to perform these taskings?

This study used a three step approach to answer these questions. First was to investigate historical development of AFCE Prime BEEF teams. Focus was on typical taskings they encountered in contingency environments and training received to prepare them for those taskings. Second was to interview AFCE Prime BEEF contingency team leadership who deployed with teams over the past seven to eight years. Focus was on types of operations supported, taskings encountered, and training received prior to deployment. In addition, interviews inquired about shortfalls in completing taskings or overall mission due to training, and recommendations to fix those shortfalls. Third was to explore mission, capability, and planned modification of AFCE Prime BEEF contingency training programs. Intent was to address incorporation of identified training suggestions.

Results of this study show three things. First, that taskings for AFCE forces do not differ across the spectrum of conflict. Second, that AFCE contingency training is adequately preparing AFCE Prime BEEF team personnel for operations across the full spectrum of conflict. This is especially noteworthy given the change in focus from rapid runway repair and base recovery after attack to force beddown and air base sustainment in 1993.⁶ Third, that current AFCE contingency training needs to be modified to improve the training provided. Leadership suggestions are to:

1. Increase the core team size of AFCE Prime BEEF teams attending AFCE contingency training.
2. Obtain unique bare base equipment for home-station training of non-core team personnel
3. Develop training material for advising officers and senior NCOs on the requirements and procedures for contract management in foreign countries
4. Modify the Silver Flag training scenario by placing greater emphasis on each phase of beddown, sustainment, teardown, and redeployment

5. Modify the Silver Flag training scenario by incorporating experienced shop personnel into the beddown planning exercise to capitalize on their expertise
6. Decrease the timeframe between training deployments to between 12 and 18 months to maximize knowledge retention and proficiency
7. Provide greater depth of training on maintenance of unique equipment, such as intermediate level maintenance
8. Modify the Silver Flag training scenario by including training on force protection requirements into classroom, beddown planning, and actual exercises
9. Provide greater in-depth training on setup and maintenance of Harvest Falcon assets by incorporating lessons learned on problems encountered in the field
10. Modify the Silver Flag training scenario by including training on and allowing use of advance technology during certain portions of the beddown planning exercise
11. Incorporate training on heavy equipment operations and convoy security procedures

Given these suggestions, this study made recommendations regarding future focus of each AFCE contingency training program. These used the current and projected security and fiscal environments as a basis. Intertwined in these recommendations are how to address the eleven suggestions noted above.

Notes

- ¹ AFDD 42, 5.
- ² AFDD 42, 4, and Air Force Manual 3-2, 5-6.
- ³ AFDD 42, 3.
- ⁴ Ibid.
- ⁵ Papp, 1.
- ⁶ Air Force Pamphlet 10-219, Volume 1, 32.

Chapter 1

Introduction

...Air and space power is more than aircraft, missiles, or weapons. The application of air and space power requires the coordinated activities of the weapon system, weapon support system, and the basing system.” “The basing system includes infrastructure, people, materiel, and information needed to sustain the weapons system and the weapons support system. The integrated performance of all three elements determines the Air Force’s capability.¹

General Issue

Since the end of World War II in 1945, focus of the United States (US) military has been on deterring war, and in the event of war—fighting and winning.² Webster’s defines war as “open and declared armed hostile conflict between states or nations.”³ Combatants in these wars are characterized as possessing differing political ideologies. An example of success in deterring war is the Cold War with the former Soviet Union. Examples of success in fighting and winning wars or armed conflicts, defined as undeclared war,⁴ are World War II, Korean Conflict, and Gulf War.

The end of the Cold War has seen the role of US military forces in world affairs expand significantly. The Cold War’s end is signified by the fall of the Berlin Wall in 1989, breaking apart of the Warsaw Pact in 1990, and dissolution of the Soviet Union in 1991. The fact the US is the only remaining superpower has forced it to become the

world's policeman.⁵ Thus, US military forces are now being called upon to use their leadership, technology, and training to support Military Operations Other Than War (MOOTW). These operations include humanitarian efforts (Provide Comfort in Northern Iraq and Restore Hope in Somalia), nation building (Nuevos Horizontes in Honduras), and peacekeeping (Just Cause in Bosnia and Uphold Democracy in Haiti) to name just a few.

A nation's combat capability is dependent upon the weapon system, weapons support system, and infrastructure as defined in Air Force Doctrine Document (AFDD) 42. Thus, training of a nation's military personnel becomes of prime importance in executing these operations.⁶ The issue of training takes on even greater importance as the role of US military forces expand into MOOTW. The question arises as to training of US military forces to perform those functions required across the full spectrum of conflict from war to MOOTW. General Dennis Reimer, US Army Chief of Staff, notes the Army focuses its training on war and is thus trained for the full spectrum of operations.⁷ Admiral Jay Johnson, Chief of Naval Operations, notes the Navy focuses its training on the full spectrum of operations and is thus trained for each element across the spectrum.⁸

Problem Background

As the role of the air base, the platform from which the weapon system operates, has grown, so has the combat engineer's role. Combat engineers are responsible for construction, operation, maintenance, and repair of the facilities and utilities, to include the airfield pavement surfaces, of the air base. The National Security Act of 1947 created the United States Air Force and transferred the Army Air Forces to that new service.⁹ However, separation of responsibilities for air base engineering required negotiation. The

Joint Army-Air Force Agreement detailing combat engineer responsibilities was published in September 1947. This agreement gave the Air Force responsibility for operation, maintenance, and minor repair of air base facilities and utilities. However, the responsibility for constructing air bases along with performing major repairs of air base facilities and utilities caused by natural disaster or bomb damage remained with the Army.¹⁰ Due to personnel limitations and overwhelming numbers of priorities for Army engineers in hostile environments, their support of air base construction and major repair was lacking.¹¹

This required the Air Force to maintain engineers in forward locations to construct and maintain air bases for the projection of air power.¹² In response to this requirement, the Air Force developed the Civil Engineer (AFCE) contingency team structure in the early 1960s. The Rapid Engineer Deployable, Heavy Operational Repair Squadron, Engineer (RED HORSE) team to perform construction and major repair taskings above the Army's capabilities.¹³ The Prime Base Engineer Emergency Force (BEEF) team concept to perform air base operation, maintenance, and minor repair responsibilities.¹⁴

The role of these teams has continued to evolve and even become blurred in some instances.¹⁵ Today, RED HORSE units primarily construct and do major repair of airfield surfaces and major facilities that require unique talents or equipment. Prime BEEF teams operate, maintain, and repair existing or constructed facilities and surfaces in daily support of weapon systems deployed forward. With AFCE reorganization in 1992, Prime BEEF teams also consist of Explosive Ordnance Disposal (EOD) and Disaster Preparedness personnel.

Problem Statement

The focus of this study is to determine if AFCE Prime BEEF team personnel are sufficiently trained for taskings they are performing across the full spectrum of operations, from war to MOOTW. Colonel John J. Jeffreys, Chief, Readiness Division, Headquarters, Air Combat Command (HQ ACC/CEX), addressed this question to the Civil Engineer Readiness Board in the spring of 1995. He noted increasing use of AFCE Prime BEEF teams to support MOOTW around the globe and that AFCE contingency training focuses on preparing AFCE Prime BEEF team personnel to support combat forces in war. His concerns were twofold:

1. Are taskings AFCE Prime BEEF team personnel perform in MOOTW significantly different from those tasked in wartime operations
2. Is current AFCE contingency training adequately preparing AFCE Prime BEEF personnel for operations across the entire spectrum of conflict.¹⁶

This study focuses on answering these questions. It consists of interviews with team leadership, officers and noncommissioned officers, who have deployed over the past seven to eight years. These interviews inquired upon the types of operations supported, taskings they performed during these operations, mission impacts attributed to lack of training, and suggestions to fix those training shortfalls. The intent is to answer three research questions:

1. Are tasks AFCE Prime BEEF team personnel perform different across the full spectrum of conflict?
2. Is current AFCE contingency training adequately preparing AFCE Prime BEEF team personnel to perform taskings across the full spectrum of conflict?
3. If the training is not adequate, what suggestions can improve this training so they are adequately prepared to perform these taskings?

Limitations

This study focuses on taskings performed by AFCE Prime BEEF team craftsman to operate, maintain and repair facilities and utilities on forward air bases in support of the projection of airpower. RED HORSE units, Prime BEEF fire-fighting teams, and Prime BEEF EOD teams have specific missions. Specifically, these are heavy construction, fire prevention and response, and explosive ordnance disposal, respectively, which many consider constant across all contingency taskings.¹⁷ Thus, these teams should continue to perform taskings for which they were designed. These are “specific roles in austere locations and near the edge of the battlefield” as well as protection of aircraft, facilities, and personnel.¹⁸

Overview of Research Paper

Chapter 2 details two issues. First, types of contingency taskings that makeup the spectrum of conflict operations supported by AFCE Prime BEEF teams, from war to MOOTW. Second, a brief history of AFCE Prime BEEF team development, historic taskings, and the training they received. Chapter 3 details the methodology used to investigate recent AFCE Prime BEEF team contingency taskings, training they received, possible training shortfalls, and suggestions to resolve those shortfalls. This includes methodology used to select AFCE Prime BEEF teams for interview and interview focus.

Chapter 4 presents data and analysis results of this study. This includes types of contingency taskings AFCE Prime BEEF teams are currently performing, training they received to perform them, and identification of any training shortfalls. Also included is an analysis of AFCE contingency training programs to support recommendations to fix any

shortfalls identified. Chapter 5 presents conclusions and recommendations. This study concludes by answering the three research questions and presents recommendations for incorporating suggestions to improve AFCE contingency training. Final recommendations are for future research to improve the capability of all AFCE contingency teams in performing taskings in contingency environments.

Notes

¹ AFDD 42, 3.

² Joint Publication 1, I-1.

³ *Webster's*, 1328.

⁴ *Webster's*, 276.

⁵ Papp, 50-51.

⁶ AFDD 42, 5.

⁷ Reimer, 9 September 1996.

⁸ Johnson, 7 February 1997.

⁹ *National Security Act of 1947*, cited in Ashdown, 7-9.

¹⁰ "Army and Air Forces Reach Agreement on Redistribution of Functions." *Army and Navy Journal*, 20 September 1947, 51, cited in Ashdown, 7-8.

¹¹ Ashdown, 15.

¹² Ashdown, 39.

¹³ Ashdown, 53-54.

¹⁴ Ashdown, 39-42.

¹⁵ Ryburn, 10-15.

¹⁶ Joe Smith, 30 September 1996 and Jeffreys, 17 December 1996.

¹⁷ McCants, 17 December 1996.

¹⁸ Ryburn, 11.

Chapter 2

Background

Chapter 2 discusses types of contingency taskings Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) teams could perform in supporting operations across the spectrum of conflict. It also presents an abbreviated history of AFCE Prime BEEF team development, historic taskings, and training.

Types of AFCE Contingency Taskings

The spectrum of contingency operations AFCE Prime BEEF teams could support includes those from war to Military Operations Other Than War (MOOTW). These vary with the nature of hostilities under which the operations take place. Webster's defines war as the use of military capabilities "in an open and declared hostile armed conflict between states or nations."¹ Joint Publication 3-07, *Joint Doctrine for Military Operations Other Than War*, defines war as "large-scale, sustained combat operations to achieve national objectives or protect national interests."² On the other hand, the focus of MOOTW is "to deter war, resolve conflict, promote peace, and support civil authorities in response to domestic crises."³ Joint Publication 3-07 notes that MOOTW "encompass(es) the use of military capabilities across the range of military operations short of war"⁴ and may include both combat and noncombat operations.⁵

War and MOOTW also differ in the way political considerations drive them. War is use of the military instrument of national power driven by political considerations to achieve national objectives or protect national interests. Thus, the military is normally the primary player in war operations. However, MOOTW are more sensitive to political considerations. These considerations permeate all levels, requiring more restrictive rules of engagement, and normally use the military instrument of power in conjunction with the political, economic and information instruments of power. Thus, the military may not be the primary player but may work in cooperation with other federal agencies, nongovernmental organizations, or private voluntary organizations.⁶ Table 1 depicts the range of military operations.

Table 1. Range of Military Operations

Military Operations		General US Goals	Representative Examples
Combat	War	Fight & Win	Large Scale Combat Operations Attack / Defend / Blockade
Noncombat	Military Operations Other Than War	Deter War & Resolve Conflict	Peace Enforcement Counterterrorism Show of Force Raid / Strike Peacekeeping Noncombatant Evacuation Operation Nation Assistance Counterinsurgency
		Promote Peace & Support US Civil Authorities	Freedom of Navigation Counterdrug Humanitarian Assistance Protection of Shipping US Civil Support

Source: Jt Pub 3-07, I-2.

Table 2 details specific operations encompassed under the MOOTW umbrella along with their descriptions. These descriptions will help classify the operations AFCE Prime BEEF teams supported the past several years. Chapter 4 details these operations. Table 3 details types of taskings AFCE units could perform in a contingency environment, based upon the situation encountered. Just like operations under the MOOTW umbrella, these are also very broad.

Table 2. Types and Descriptions of MOOTW Operations

Type of MOOTW Operations	Description
Arms Control	Any plan, arrangement, or process, resting upon explicit or implicit international agreement to govern the numbers, types, and performance characteristics of weapon systems; and the numerical strength, organization, equipment, deployment or employment of the armed forces retained by the parties.
Combating Terrorism	Actions taken to oppose terrorism, to include antiterrorism (defensive measures taken to reduce vulnerability to terrorist acts) and counterterrorism (offensive measures taken to prevent, deter, and respond to terrorism).
DOD Support to Counterdrug Operations	DOD support to federal, state, and local law enforcement agencies in their efforts to disrupt the transfer of illegal drugs into the United States.
Enforcement of Sanctions / Maritime Intercept Operations	Operations which employ coercive measures to interdict the movement of certain types of designated items into or out of a nation or specified area.
Enforcing Exclusion Zones	To prohibit specified activities in a specific geographic area. Exclusion zones can be established in the air, or on sea, or land.
Ensuring Freedom of Navigation and Overflight	To demonstrate US or international rights to navigate sea or air routes
Humanitarian Assistance (HA)	. Operations to relieve or reduce the results of natural or manmade disasters or other endemic conditions, generally limited in scope and duration, intended to assist or complement efforts of host-nation civil authorities or agencies.

Table 2—continued

Type of MOOTW Operations	Description
Military Support to Civil Authorities (MSCA)	Provide temporary support to domestic civil authorities when permitted by law, normally taken when an emergency overtaxes the capabilities of the civil authorities.
Nation Assistance / Support to Counterinsurgency	Civil or military assistance (other than HA) rendered to a nation by US forces to promote long-term regional stability. includes Security Assistance, Foreign internal Defense, and Humanitarian and Civil Assistance Programs.
Noncombatant Evacuation Operations (NEO)	Normally relocate threatened noncombatants from a foreign country.
Peace Operations	Military operations to support diplomatic efforts to reach a long-term political settlement. include Peacekeeping (military operations undertaken with the consent of all major parties, to monitor and facilitate implementation of an agreement) and Peace Enforcement (application, or threat of, military force to compel compliance with resolutions or sanctions designed to maintain or restore peace and order).
Protection of Shipping	Provide protection of US flag vessels, US citizens, and their property against unlawful violence in and over international waters. includes coastal sea control, harbor defense, port security, countermine operations, and environmental defense.
Recovery Operations	Conducted to search for, locate, identify, rescue, and return personnel or human remains, sensitive equipment, or items critical to national security. These may be clandestine, covert, or overt.
Show of Force Operations	Designed to demonstrate US resolve, involve increased visibility of US deployed forces in an attempt to defuse a specific situation.
Strikes and Raids	Strike - offensive operations conducted to inflict damage on, seize, or destroy an objective for political purposes. Raid - usually a small-scale operation involving swift penetration of hostile territory to secure information, confuse the enemy, or destroy installations.
Support to Insurgency	Support an organized movement aimed at the overthrow of a constituted government.

Source: Jt Pub 3-07, III-1 to III-15

Table 3. Types of AFCE Contingency Taskings

	Contingency Taskings
1.	Emergency repair of war damage to facilities
2.	Beddown of units and weapons systems
3.	Base Development, including lines of communication
4.	Operations and Maintenance of own facilities and installations
5.	Crash rescue and fire suppression
6.	Construction management of troop and contract work
7.	Limited facility denial measures
8.	Limited decontamination
9.	Participation in rear area defense
10.	Redeployment and retrograde construction
11.	Real estate acquisition
12.	Combating terrorism
13.	Counterdrug
14.	Security assistance
15.	Civil-military operations
16.	Combined training
17.	Support to US Government agencies
18.	Environmental protection
19.	International or domestic emergencies
20.	Nation assistance

Source: Jt Pub 4-04, Fig I-2, I-3.

AFCE Prime BEEF Team History

The Army Signal Corps provided initial engineer aviation support.⁷ This was in World War I with the airplane's first military use. World War II saw the first specific group of engineers providing aviation support. Known as Aviation Engineers, they were small groups of men within the Army Air Forces. They had special construction skills and understood aviation's needs and spoke its language.⁸ These engineers were critical to the

island hopping campaign of the South Pacific as well as campaigns in North Africa and Europe.

Aviation Engineers were trained and equipped to rapidly construct, repair, maintain, camouflage, and defend air bases in forward areas.⁹ Aviation Engineer training centers were established throughout the United States to train them prior to their deployment overseas. However, the urgency for troops resulted in shorter training.¹⁰ Their main problem was lack of training in contingency engineering and local conditions such as soil and drainage for runways, roads, and buildings.¹¹ Minimal loss of aircraft and life occurred, mainly through quick thinking, expedient methods, and backbreaking labor. However, many operations were in danger of failure due to poor runway conditions.¹²

The National Security Act of 1947 established the Air Force as a separate service. It also left design and construction responsibilities of Air Force installations with the US Army Corps of Engineers (USACOE).¹³ Air Force engineers were to only perform facility maintenance and repair, to include that caused by natural disaster or bomb damage. During the Korean Conflict, the USACOE faced limited manpower and numerous priority taskings. Thus, the Air Force relied upon Special Category Army with the Air Force (SCARWAF) units to do much of the early construction. However, these SCARWAF units were "woefully undermanned and inexperienced."¹⁴ This resulted in supplementing the SCARWAF units with Air Force personnel from the Air Installation Sector (AIS). The AIS's main responsibility was maintenance and operation of the air bases, upon which they were very successful.¹⁵

The end of the Korean Conflict saw deactivation of all SCARWAF units. Despite Air Force objection, the USACOE retained troop construction responsibilities for Air Force

bases. Air Force engineers retained responsibility for operations and maintenance as well as bomb damage repair with organic resources.¹⁶ The crisis in Lebanon in 1958 led to the Air Force establishing the "Civil Engineer Mobile Team Concept." The purpose of this concept was to create a capability for operations and maintenance requirements in emergency situations. However, they still had no heavy construction responsibilities.¹⁷

The initial proof of the Civil Engineer Mobile Team Concept was in response to the Berlin Crisis in 1961. The USACOE's response to the need to deploy troops forward in response to the Berlin Crisis, was "less than satisfactory" per Brigadier General Oran O. Price, United States Air Forces in Europe Director of Civil Engineering.¹⁸ This required the Air Force to quickly develop a Civil Engineer mobile team capability. This concept quickly brought numerous bases in Europe to operational status, supporting the readiness of airpower to respond if needed.¹⁹

The Vietnam conflict saw this mobile team concept formalized into Project Prime BEEF, as recommended by a 1963 joint Civil Engineer and Manpower Organization Study Group. Initially without any construction or repair capabilities, these Prime BEEF teams deployed forward. They constructed revetments, installed and repaired water and sewer lines, completed beddown of new Air Force units, and constructed and repaired fuel lines and systems. Such units were invaluable to the operation of the air base. These engineers received training through personnel acquisition, initial technical training, recurring sources, and at home-station as well as during real world deployments. This training proved itself invaluable in preparing AFCEs to perform the numerous contingency taskings they received.²⁰

As the Prime BEEF team concept continued to develop, the 1978 revision of DoD Directive 1315.6, defined AFCE wartime tasks as:

1. Emergency repair of war damage to air bases
2. Force beddown of AF units and weapon systems excluding Army base development responsibilities
3. Operations and maintenance of AF facilities and installations
4. Crash rescue and fire suppression
5. Construction management of emergency repair for war damage and force beddown²¹

The Real Property Maintenance Activity report in 1983 reworded this into a mission statement. Thus, the Air Force Civil Engineering Mission became to "Provide necessary assets and skilled personnel to prepare and sustain global installations as stationary platforms for the projection of aerospace power in peace and war."²²

To support this mission, Air Force Regulation (AFR) 93-3, dated December 1982, formalized AFCE contingency training into three major components. The first was training obtained through the performance of AFCE's peacetime base operation and maintenance role. This included both initial technical and on-the-job-training. The second was specialized training at Field 4, Eglin AFB, Florida. This was under control of Headquarters, Air Force Engineering and Services Center (AFESC), Detachment 2. This training focused on Rapid Runway Repair (RRR) and Base Recovery After Attack (BRAAT). The third was home station training. This included numerous items such as weapons qualification, field sanitation, bivouac, convoy and work party security, expedient methods, explosive ordnance reconnaissance, chemical warfare, and government vehicle and equipment operations.²³

Specialized AFCE contingency training had its beginning at Wright-Patterson AFB, Ohio, around 1970, focused on beddown skills. This relocated to Tyndall AFB, Florida, in

1972, and then to Field 4 at Eglin AFB, Florida, in 1979, where it underwent great expansion. The specialized Prime BEEF training at Field 4 enabled civil engineers to learn RRR techniques on real craters blown in airfield surfaces. They also received “some hands-on training in bomb damage repair, force beddown, Harvest Eagle equipment,²⁴ chemical warfare defense, and explosive ordnance reconnaissance.”²⁵ In October 1985, the program expanded to incorporate other specialties—disaster preparedness, explosive ordnance disposal, fire fighting, services, and commissary specialties. This focused the BRAAT training on integrating individual functional areas for a coordinated base recovery effort in a realistic wartime environment.²⁶

With the collapse of the Soviet Union and Warsaw Pact threat, specialized AFCE contingency training evolved once again. The training function at Eglin AFB’s Field 4 relocated to Tyndall AFB in August 1993 and switched its focus back to beddown skills. This change in focus resulted from the change in the strategic environment. AFCE leadership felt it was the most probable tasking for AFCE Prime BEEF teams. Experience during the Gulf War supported this hypothesis. Engineers in the region did no RRR or BRAAT, but almost all did some form of force beddown.²⁷ Training in RRR and BRAAT is now a minimal component of the program. The new name for this training program became the Silver Flag Exercise Site, to be consistent with other Air Force contingency training programs.²⁸

Summary

As detailed in this chapter, types of operations AFCE Prime BEEF teams can support across the spectrum of conflict are very broad. With the dynamic security environment

since the end of the Cold War, the US military is supporting an increasing number of these operations. Thus, it is only logical that AFCE Prime BEEF teams will also continue to see their use in MOOTW increase. This increasing use in MOOTW and the wide range of MOOTW operations could take AFCE Prime BEEF teams beyond their historic role and mission as well as the focus of AFCE contingency training. This makes it extremely important AFCE contingency training be focused on all aspects of the AFCE mission and not just those tasks expected in wartime operations.

Notes

¹ Webster's, 1328.

² Joint Publication (Jt Pub) 3-07, I-1.

³ Ibid..

⁴ Jt Pub 3-07, vii.

⁵ Jt Pub 3-07, I-1.

⁶ Jt Pub 3-07, I-1 to I-2.

⁷ Air Force Instruction (AFI) 10-219, Vol. I, 7.

⁸ AFI 10-219, Vol. I, 8.

⁹ AFI 10-219, Vol. I, 8.

¹⁰ Hartzer, 13 March 1997

¹¹ Ashdown, 4-5.

¹² Waggoner and Moe, 62-67.

¹³ *National Security Act of 1947*, cited in Ashdown, 7-9.

¹⁴ Hartzer, 13 March 1997.

¹⁵ Ashdown, 16, 30-32.

¹⁶ Ashdown, 34.

¹⁷ Ashdown, 35-39

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ashdown, 40-42, 50-51.

²¹ United States Department of Defense Directive 1315.6, 9-10.

²² Smith, Emmitt, 10.

²³ AFR 93-3, 15-16.

²⁴ **Harvest Eagle**—A nickname for an air-transportable package of housekeeping equipment, spare parts, and supplies required for support of US Air Force general purpose forces and personnel in bare-base conditions. Examples of Harvest Eagle equipment are water purification units, tents, and showers. Harvest Eagle is not intended to be an all-inclusive package of logistics support for sustained air operations; however, it may be

Notes

used until augmented by Harvest Bare. (AFI 10-209, RED HORSE Program, 29 April 1994, pg. 12)

²⁵ AFI 10-219, Vol. I, 28.

²⁶ Ibid.

²⁷ Hartzler, 13 March 1997.

²⁸ AFI 10-219, Vol. I, 32.

Chapter 3

Methodology

This chapter details the three step methodology used to develop answers to the three research questions. First was conducting a literature search to determine the development of the Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) teams. Focus was on types of taskings they historically performed in contingency environments, training they received, and any shortfalls in that training. Second was conducting phone interviews with Prime BEEF team leadership personnel who deployed with teams within the past seven to eight years. Focus was investigating the types of operations they supported, types of taskings they performed, training they received, shortfalls in that training, and any suggestions to improve that training. Third was examining AFCE Contingency training programs. Focus was how to incorporate suggestions from step two to improve AFCE contingency training.

Literature Review

The first step consisted of a literature review to investigate the history of AFCE Prime BEEF team development, taskings, and training. This research centered on previous research documents and Air Force publications. Previous research documents reviewed were from efforts conducted at Air War College (AWC) and Air Command and Staff

College (ACSC) at Maxwell AFB, Alabama, and the Air Force Institute of Technology at Wright-Patterson AFB, Ohio. These previous studies documented the history of aviation engineers from World War II to the mid-1980s. Focus was on the engineers' organizational structure, responsibility, and taskings during World War II, Korean Conflict, Berlin Crisis, and Vietnam Conflict.

These studies paid particular attention to division of air base construction and operations and maintenance responsibilities between Army and Air Force engineers. This division began with the National Security Act of 1947 and continued through each of the above conflicts. The division of responsibilities became the impetus behind the Air Force developing the Prime BEEF team concept in the 1960s. This history was well documented by Lieutenant Colonel Floyd Ashdown in *A History of the Warfighting Capability of Air Force Civil Engineering*, by Captain Dean Waggoner and 1st Lieutenant Allen Moe in *A History of Air Force Civil Engineering Wartime and Contingency Problems from 1941 to the Present*, and in Air Force Pamphlet (AFP) 10-219, Volume I, *Contingency Disaster Planning*. The pertinent portion of this history is synopsized in Chapter 2 of this research paper.

Review of Air Force publications determined historic doctrinal development for AFCE Prime BEEF teams and the training requirements to support that doctrine. This focused on doctrinal taskings for which AFCE Prime BEEF teams were responsible and the types of training available to prepare them for these taskings.

Several research efforts at AWC and ACSC during the mid-1980s recommended AFCE develop a doctrine to guide it into the 21st century. These documents included a study by Colonel Arthur Kishiyama titled *The Relevance of Doctrine to Air Force Civil*

Engineering and one by Major Alfred Hicks titled *Statements of Belief Relating to the Combat Employment of Civil Engineering Forces*.

Air Force Manual (AFM) 3-2, *Civil Engineering Combat Support Doctrine*, for which Major Hicks was a key author, and Air Force Doctrine Document 42, *Civil Engineer*, which replaced AFM 3-2, detailed doctrinal responsibilities.

Air Force Regulation (AFR) 93-3, *Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program*, and AFP 93-7, *Prime BEEF Manager's Handbook*, detailed training requirements to support this doctrine. Air Force Instruction (AFI) 10-210, *Prime Base Engineer Emergency Force (BEEF) Program*, and AFP 10-219, Volume 8, *Prime BEEF Manager's Guide*, have replaced AFR 93-3 and AFP 93-7, respectively. Again, the pertinent portion of this information is synopsised in Chapter 2 of this research paper.

Interviews

The next step concentrated on operations AFCE Prime BEEF teams have recently supported. Focus was determining types of operations being supported, taskings they performed, and training they received prior to or during the operation. Current guidance documents do not require end of deployment reports be submitted to higher headquarters, per Air Force Civil Engineer Support Agency (AFCESA) and Major Command (MAJCOM) personnel. Thus, information was gathered from two sources. The first was a study prepared by New Mexico Research Institute for AFCESA entitled *Lessons Learned by Civil Engineering, Services, Air Base Operability, Disaster Preparedness*,

and Explosive Ordnance Disposal during DESERT SHIELD/DESERT STORM/PROVEN FORCE/PROVIDE COMFORT.

The second source was Prime BEEF team leadership. Focus was on written information not submitted to higher headquarters or personal recollection and opinion. To gather this information each MAJCOM Civil Engineering readiness staff within the Continental United States (CONUS) was queried by telephone. Table 4 details personnel contacted at each MAJCOM. This determined which AFCE Prime BEEF teams in their command deployed to support a contingency operation over the past seven to eight years. Contact with those units determined an officer or noncommissioned officer who held a senior position on that team who was still available at that location. Table 5 details the final list of Prime BEEF team leadership interviewed for this study and basic information about their deployments.

Table 4. MAJCOM Readiness Staff Contacted

MAJCOM	Point of Contact	Position
ACC	Mr. John Williams	Readiness Manager
AMC	Major Timothy Boone	Chief, Contingency Operations Division
AFMC	Mr. Todd Welch	Deputy Chief, Readiness Contingency Division
AFSPC	CMSgt Carl E. McCants	Readiness Superintendent
AETC	Mr. C.J. Cisneros	Deputy Chief, Readiness Directorate

Three reasons justify a phone interview with these Prime BEEF team leaders to gather the needed information. First is the increased probability of response over a mailed survey. Second is the chance to gather greater details via a phone interview as

Table 5. Prime BEEF Team Leadership Interviewed

<u>MAJCOM / Unit Location</u>	<u>Deployed Location</u>	<u>Point of Contact</u>	<u>Year / Duration</u>	<u>Team Size</u>	<u>Operation Type</u>
ACC					
Langley AFB	Jordan	Lt Col Ken Shelton	Mar-Jul 96 / 95 d	104	Peacekeeping
Moody AFB	Shaikh Isa AB, Bahrain	MSGT Ronald Jordan	Sep-Dec 96 / 90 d	10	Peacekeeping
Seymour Johnson AFB	Doha IAP, Qatar	Lt Col Quincy Purvis	Jun-Sep 96 / 120 d	95	Peacekeeping
Mt Home AFB	Oman	Capt Joel Holtrop	Aug 90-Apr 91 / 243 d	50	MRC
	Cairo, Egypt		Aug-Dec 95 / 120 d	50/180	Exercise
AMC					
Travis AFB	Taszar AB, Hungary	SMSgt William Barry	Dec 95-Mar 96 / 93 d	12	Peacekeeping
Scott AFB	Taszar AB, Hungary	Capt Rebecca Nelson	Sep 96-Jan 97 / 130 d	18	Peacekeeping
McChord AFB	Freetown, Sierra Leone	MSgt Timothy Downs	Apr-May 96 / 30 d	8	NEO
McChord AFB	Cairo, Egypt	MSgt Gordon Collier	Oct 96 / 21 d	14	Nation Assistance
HQ AMC/CEI	Howard AB, Panama	Maj Ed Gomez (with	May 89 / 28 d	50	NEO
	Saudi Arabia AOR	4449th MOBSS)	Aug 90-Mar 91 / 217 d	50	MRC
AFMC					
Wright-Pat AFB	Cairo, Egypt	Capt Parmenter	Sep-Dec 95 / 90 d	50 (200)	Exercise
Wright-Pat AFB	Al Dhafra, UAE	1st Lt Andy Muser	Jul-Nov 96 / 101 d	71	Peacekeeping
Hill AFB	Al Minhad, UAE	MSgt Jeff Clouse	Aug 90-May 91 / 278 d	71	MRC
	Korea		Sep-Oct 95 / 30 d	42	Exercise
	Classified		Dec 96-Current / 43+ d	21	Peacekeeping

Table 5. Prime BEEF Team Leadership Interviewed (continued)

AFSPC								
HQ AFSPC/CCE	Batman, Turkey Silopi, Turkey & Sirsenk, Iraq	Capt Darren Daniels (with Bitburg AB)	Jan-Feb 91 / 60 d Mar-Jul 91 / 81 d	63 65	MRC Humanitarian			
F.E. Warren AFB	Riyadh, Saudia Arabia	Capt Rebecca Nelson	Jun-Oct 91 / 120 d	50	Peacekeeping			
Vandenberg AFB	Al Dhafra, UAE	Lt Anthony Damas	Sep 96-Jan 97 / 141 d	37	Peacekeeping			
Vandenberg AFB	Honduras Riyadh, Saudia Arabia	Lt Bo Burrick	May-Sep 94 / 120 d Jun-Aug 96 / 91 d	100 60	Nation Building Peacekeeping			
Peterson AFB	Honduras (4 sites)	TSgt Ed Batar	Jun 94 / 15 d	35	Nation Building			
AETC								
Sheppard AFB	Panama (2 sites)	TSgt Adrian May	Jun-Jul 94 / 42 d	27	Nation Building			
Columbus AFB	El Salvador (2 sites)	MSgt Troy Wiitila	Mar-Apr 94 / 30 d	35	Nation Building			
CIVILIANS								
CH2M Hill	Batman, Turkey Silopi, Turkey	Mr. Alfred Hicks, Jr. (with Bitburg AB)	Jan-Feb 91 / 61 d Mar-Jul 91 / 91 d	63 65	MRC Humanitarian			

respondents are more likely to express certain details orally than in writing. Third is the possibility of developing questions probing certain areas for greater detail based upon the response to previous questions. Only Prime BEEF teams under CONUS MAJCOMs were interviewed for this study. Considering the small number of teams that deployed over the past seven to eight years, the entire known population was interviewed. This was to obtain the widest selection of contingency operations along the spectrum of operations discussed in Chapter 2 from which to evaluate the adequacy of current AFCE contingency training.

Appendix A contains the questionnaire used to guide the interviews conducted with AFCE Prime BEEF team leadership. The initial questions provided background of the deployment. The included time frame and duration, team size and technical skill composition, type of operation supported, mission and location, and number of engineers on site to support that specific deployment.

The second level of questions focused on the type of equipment used to support the mission. Specific questions explored the type of equipment with which Prime BEEF teams deployed and what equipment met them at the deployed location.

The third level explored the specific taskings the AFCE Prime BEEF team completed to support the mission. Specific details obtained about the taskings allowed a comparison of recent taskings with historic AFCE taskings in contingency environments.

The final level explored the specific training team personnel received prior to the deployment. Specifics were:

1. Time frame since attending Silver Flag at Tyndall AFB, Florida
2. Currency of home-station training
3. Shortfalls in task or mission accomplishment during the deployment due to training

4. Training the leadership, themselves or others on site, felt would have been valuable prior to the deployment

AFCE Contingency Training

Exploration of current AFCE contingency training programs began with a conversation of possible improvements being investigated by Headquarters Air Combat Command Civil Engineering Readiness Staff (HQ ACC/CEX) under the guidance of Colonel John J. Jeffreys. He detailed the focus of the training being conducted at the Silver Flag site at Tyndall AFB, Florida. He also detailed his knowledge of the training missions for the Air Mobility Warfare Center at Fort Dix, New Jersey, and 49th Materiel Maintenance Group at Holloman AFB, New Mexico.

During this inquiry effort, each training location was independently evaluated. Focus was on the (1) mission, (2) training capabilities, (3) current modifications underway or being investigated, and (4) other possible improvements to satisfy training shortfalls. Modifications to improve the training were based upon student input or senior AFCE leadership to include the Civil Engineer Readiness Board.

Mr. Joe Smith, Readiness Training Manager at HQ AFCESA, provided additional detailed input. These included unit missions, a historic view of problems and improvements, and current direction of AFCE contingency training. Table 6 details personnel contacted, either at the various training locations or having various levels of concern or experience with these training locations. Recommendations developed to minimize or eliminate the training shortfalls considered all the information gathered during this study.

Table 6. Other Personnel Interviewed

MAJCOM	Unit	Point of Contact	Position
ACC	HQ ACC	Col John J. Jeffreys	Chief, Readiness Division
ACC	823 RH, Det 1	CMSgt John Smith, III	Site Chief, Silver Flag
ACC	823 RH, Det 1	MSgt Thorpe	Scheduler, Silver Flag
ACC	49 MMG	Col Bruce F. McConnell	Commander
ACC	49 MMG	TSgt Boyd Smith	NCOIC, Bare Base Training
AETC	366th Training Flight	Mr. Billie Cannon	Power Production Course Instructor
AETC	366th Training Flight	Mr. Dave Fowler	Structures Course Director
AETC	366th Training Flight	Mr. Mike Klepp	Liquid Fuels Single Point Manager
AETC	366th Training Flight	TSgt Steven T. Mann	Contingency Training Instructor
AETC	366th Training Flight	CMSgt Richard D. Park	Civil Engineer Manager
USAF	510 CES	Maj Irv Lee	Engineering Squadron Commander
HQ AFCEA		Dr. Ron Hartzler	AFCE Historian
HQ AFCEA		CMSgt Ercilia H. Ramos	CEMIRT Operations and Readiness Manager
HQ AFCEA		Mr. Joe Smith	AFCE Readiness Training Manager

Chapter 4

Data

This chapter presents data and analysis for both the literature search and interviews conducted during this study. This is presented in three sections. Section one details lessons learned from Operations Desert Shield, Desert Storm, and Provide Comfort found during the literature search for this study. Section two details results of interviews with Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) team leadership regarding deployments. Section three details results of interviews regarding mission and capability of various AFCE contingency training locations.

Lessons Learned—Literature Search

In late 1992, Headquarters, Air Force Civil Engineer Support Agency contracted with New Mexico Engineering Research Institute to conduct an independent analysis of operations by five combat service support functions in Southwest Asia during the previous year. One of the five organizations analyzed was AFCE. The time period was from the beginning of Operations Desert Shield on 6 August 1990 to the second round of rotations for Operation Provide Comfort in October 1991. One area analyzed was adequacy of training to prepare AFCE Prime BEEF teams to perform functions essential to meeting mission requirements.

The report identified numerous lessons learned concerning adequacy of AFCE Prime BEEF team training. These were based upon hundreds of interviews with engineering personnel of all ranks deployed to the theater. Combined, these generated one major lesson learned requiring action—the need to provide “more specific training on Mobility Basing Sets” to Air Force base support personnel.¹ The report states that success in meeting mission requirements resulted from one item. This was nearly every Prime BEEF team containing “at least a few” personnel who had seen or used the mobility basing sets during exercise deployments or at Eglin AFB, Field 4. Without that, the report notes it was doubtful engineers could have met numerous time critical mission requirements.²

Action taken prior to the report being published resulted in the AFCE Readiness Board validating this lesson learned and placing it as a Medium Priority Item.³ This was undoubtedly one of the key drivers behind refocusing AFCE contingency training back to beddown skills given the change in security environment noted earlier in this report.

AFCE Prime BEEF Team Leadership Interviews

This section presents data and analysis from interviews of AFCE Prime BEEF team leadership who deployed with teams over the past seven to eight years. Interview focus was on types of operations supported, taskings performed, and training conducted prior to or during the operation. In addition, any shortfalls in mission or task accomplishment directly related to training, and training the team leadership would have desired to have had looking at the operation in retrospect were identified.

Table 5 details a total of 19 interviews conducted with AFCE Prime BEEF team leadership who had deployed with a total of 27 different teams. Table 7 shows a

breakdown of these deployments by operation type and calendar year. The data appears skewed by calendar year, more deployments within last two to three years. It is assumed this is from availability of AFCE Prime BEEF team leadership to interview and not indicative of the population of deployments over that period.

Determining the exact population of deployments over the past seven to eight years is nearly impossible. AFCE readiness training managers at all levels noted no central tracking system for team deployments exists.⁴ Also, no requirement exists to submit end-of-deployment reports upon completion of the deployment.⁵

In addition, initial teams deployed from complete AFCE units only perform initial camp setup and operation. Once complete, follow-on teams composed of individuals from numerous AFCE units making up the required team strength replace this initial AFCE unit.⁶ Thus, interviews conducted during this study are assumed to be a representative sample of the entire number of AFCE Prime BEEF team deployments over the past five years.

Table 7. Operations Supported by Type and Calendar Year

Type of Operation	Number	89	90	91	92	93	94	95	96	97
Peacekeeping	10			1					8	1
Major Regional Conflict	5		3	2						
Nation Building	4						4			
Major Exercise	3							3		
Humanitarian	2			2						
NEO	2	1							1	
Nation Assistance	1								1	
Total	27	1	3	5	0	0	4	3	10	1

The following subsections detail the information gathered from the AFCE Prime BEEF team leadership during the interviews. This brief synopsis highlights the important

information. Table 10 in Appendix B lists the specific information to allow side by side comparison. Table 10 also shows which team leadership made which training recommendations. The last subsection of this section presents details on these recommendations.

Peacekeeping Operations

Of the ten peacekeeping operations, eight supported Operation Southern Watch and two supported Operation Joint Endeavor Implementation Force . Southern Watch support included force beddown, force protection and camp maintenance for three objectives. First, as a deterrent response to Saddam Hussein's troop movements and actions during the spring and summer of 1996. Second, in support of retaliatory missile strikes on 2 September 1996 in response to Iraq military actions against Kurdish forces in northern Iraq. Third, in support of troop protection measures after the terrorist bombing of the Al Khobar Towers in Dhahran, Saudi Arabia on 25 June 1996. Joint Endeavor support was primarily crash rescue, snow removal and operations and maintenance of Emergency Airfield Lighting Systems (EALSs). Their secondary mission was supporting the US Army in base camp maintenance. These taskings were in support of airlift operations, moving troops and supplies into the theater.

Taskings to be performed dictated team size and team kit makeup. Large teams for force beddown and force protection measures. Smaller teams for specific tasks of snow removal, crash rescue and EALS operation. Teams deployed with standard team kits⁷ as Harvest Falcon assets⁸ required on site were either prepositioned or met them on site. Three teams added components and one took only a minimal team kit as the situation

warranted. Each team was current on required home station and specialized training. Team leadership identified no shortfalls in task or mission accomplishment.

Major Regional Conflicts (MRCs)

All five Major Regional Conflict (MRC) deployments were in support of Operations Desert Shield and Desert Storm. Each performed force beddown and camp maintenance taskings in support of airpower operations. Taskings dictated team size and three of five teams deployed with standard team kits as they used Harvest Falcon assets either prepositioned in theater or meeting them on site. The other two teams modified the team kits with power distribution cable, electrical connectors, plumbing, and other miscellaneous items. Shortfalls in the Harvest Eagle assets⁹ meeting them on site in Turkey required these additions. Each team was current on required home station and specialized training.

Team leadership deployed to Turkey identified no shortfalls due to training. However, team leadership in the Saudi Arabian theater of operations identified major training shortfalls with the Harvest Falcon equipment. This equipment was fairly new to the inventory and Silver Flag was not yet operational and focusing on beddown training with these new assets. Thus, a majority of team members were unfamiliar with or had never seen this equipment before.¹⁰ Reason for deployment success was three-fold. First, almost every team had several personnel who had seen or had experience with the equipment before.¹¹ Second, was the deployment of a 50-person team from the 4449th Mobility Support Squadron (MOBSS) at Holloman AFB, New Mexico. They split into smaller teams in-theater to train deployed AFCE Prime BEEF teams on the equipment for several days until they could operate alone, then they moved to the next location.¹² Third,

Air Force Civil Engineering Maintenance, Inspection, Repair, and Training (CEMIRT) teams rapidly deployed into the theater. They provided expert knowledge for repair of the equipment as well as training to AFCE personnel on equipment setup and operation.¹³

Recommendations from this experience were to establish a beddown training site with Harvest Falcon assets and train AFCE Prime BEEF teams on the equipment. Establishing the Silver Flag Exercise Site in 1993 accomplished this. Silver Flag training has been very successful as determined by input from the seven teams that supported peacekeeping operations in 1996 discussed earlier. Thus this recommendation has been implemented.

Nation Building Operations

All four nation building deployments were to Central American countries. Three of the four teams performed construction and repair taskings in community facilities such as clinics and schools. The other team performed force beddown for US Army troops conducting the nation building operations. Taskings dictated team size. The three teams constructing and repairing community facilities deployed with only required hand tools and supplies. The team conducting force beddown deployed with the standard team kit. Each team was current on required home station and specialized training. However, construction taskings dictated supplemental training in critical skills. An example was training on cutting and laying masonry block for troops not required to have training in this area. Team leadership identified no shortfalls due to training.

Major Exercises

Of the three deployments to support major exercises, two were the same deployment to Bright Star-95 in Cairo, Egypt, with the other being in support of Ulchi Focus Lens in

Korea. Each team performed force beddown and camp maintenance taskings. Taskings dictated team sizes and makeup of the team kits. Each team deployed with the standard team kit as Harvest Falcon assets used were either prepositioned in theater or met them on site. Each team was current in required home station and specialized training.

One team supporting Bright Star-95 noted shortfalls due to training. This team had not been to Silver Flag in almost two years. Team leadership noted major problems in initially setting up and operating the equipment. However, with the other team to train them, and the fact the instructions fully detail how to utilize the equipment, they were at full speed within several days with no tasking or mission impacts. As the team Officer-In-Charge noted, the equipment is practically “plug-and-play.”¹⁴

Humanitarian Operations

The two deployments to support Humanitarian Operations were both for Operation Provide Comfort in Eastern Turkey and Northern Iraq. These deployments were the same team but eventually resulted in supporting two different locations. The teams performed force beddown and camp maintenance taskings. Taskings dictated team size and use of Harvest Eagle assets required modification of the team kit to three times the standard size. Included were power distribution cable, electrical connectors, plumbing, and other miscellaneous items to overcome the assets’ shortfalls. When a second mission developed in northern Iraq, the team used the standard team kit as Harvest Falcon assets redeployed from Saudi Arabia met them on site. The team was current in required home station and specialized training.

Team leadership identified shortfalls due to training during the second deployment using Harvest Falcon assets. However, several personnel on this team were familiar with

the Harvest Falcon assets. Sufficient time also existed for the entire team to become proficient on the assets. Thus, no tasking or mission impacts developed. The leadership strongly felt AFCE contingency training needed to incorporate these new assets. As noted in the MRC section above, this has occurred with Silver Flag training on force beddown with Harvest Falcon assets. Thus, this recommendation has been implemented.

Noncombatant Evacuation Operations (NEO)

The two deployments to support Noncombatant Evacuation Operations (NEO) were to Western Africa and Central America. The first team deployed to Liberia to support evacuation of remaining US and allies' citizens. Tasking was operation and maintenance of an EALS kit to support airlift operations. The second team deployed to Panama to support evacuation of US citizens. However, it transitioned into force beddown of troops for Operation Just Cause. Taskings dictated team size and team kit composition. Each team was current on home station and specialized training. Team leadership identified no shortfalls due to training.

Nation Assistance Operation

The one deployment in support of a Nation Assistance Operation was to Cairo, Egypt. The mission was to support US military forces providing training under exercise Phoenix Camel to Egyptian paratroopers. Tasking was force beddown for an aircraft squadron supporting the operation. The minimal support required dictated the minimal team size. They deployed with the standard team kit as they performed maintenance on existing structures. Also, they used Harvest Falcon assets propositioned in theater and

deployed from elsewhere to meet them on site. This team was current on home station and specialized training and team leadership identified no shortfalls due to training.

Training Recommendations

Training recommendations identified by AFCE Prime BEEF team leadership during this study fall into three categories. These are:

1. Increasing who receives the training and the frequency of training
2. Modifying the focus of current training
3. Increasing the items in current training

Who and frequency of training. The problem is lack of familiarity with Harvest Falcon assets, especially among the airman and young noncommissioned officers (NCOs), when deployed. Team leadership noted several causes of this problem. First is sending only core individuals from the Prime BEEF team to Silver Flag training. AFCE defines core individuals as the 5- and 7-level experts in each technical field, as shown in Appendix C. Thus, all 3-level and a majority of 5-level technicians never see the Harvest Falcon assets until deployed in time sensitive situations. However, the Harvest Falcon assets are for the most part “plug and play.”¹⁵ This shortens the on-site training time to get personnel ready to operate on their own as fully qualified teams, to two to three days.

The second cause is Silver Flag training frequency being every 24 months. Team members lose their proficiency by the end of this period. Compounding this problem is the third cause, unique pieces of equipment are not available for home station training. These items include Mobile Electrical Power (MEP)-12 750 kilowatt (KW) diesel powered turbine generators, Reverse Osmosis Water Purification Units (ROWPUs), Mobile Aircraft Arresting Systems (MAASs), and Emergency Airfield Lighting Systems (EALS). The cost of these items is so high and the demand in the field is so great, that it has been

difficult to get them for the AFCE contingency training locations.¹⁶ Thus, none are available at home-station for the core skills team members who went to Silver Flag to train the non-core personnel. Therefore, no hands on training is possible. This further supports increasing core team size so more personnel receive training on these unique equipment items.

Recommendations in this area are threefold. First is to increase core team size to allow a greater number of personnel to attend Silver Flag training. Second is to increase training frequency to between 12 and 18 months. Third is to find a way to provide unique assets to units for home station training.

Modifying the focus of current training. The problem is current training is not meeting all the needs of AFCE Prime BEEF team personnel. The following seven recommendations to modify the training can fill these gaps. First is to provide officers and senior NCOs training on contract management requirements and procedures in foreign countries. Base sustainment operations require contracting with local companies for various services such as waste disposal or construction. Team leadership was unclear on procedures, creating frustration and resulting in on the job learning. They felt prior orientation would have improved efficiency and reduced frustration levels.

Second is placing a greater emphasis at Silver Flag on beddown, sustainment, teardown, and redeployment of assets. Current training provides an orientation on setup and operation of assets. However, major problems occur when assets need to be redeployed. Typically, teams from the 49 Materiel Maintenance Group (MMG) at Holloman AFB deploy to oversee the teardown, packaging, and redeployment of assets. Improved training could better utilize these personnel on site and minimize costs.

Third is improving the Silver Flag beddown exercise by including the experience of shop personnel instead of only officers and senior NCOs. Currently, only officers and senior NCOs perform planning for beddown of forces. However, shop personnel have unique perspectives that are very valuable to this effort. Team leadership felt since shop personnel are included in real situations, we should train the way we fight.

Fourth is providing a greater depth of training on unique equipment. Specifically, team leadership desires training to go beyond periodic maintenance to intermediate level maintenance. Numerous teams received equipment not properly maintained, not properly prepared for redeployment, or under such heavy use that time was not available for required maintenance. These caused assets to be unusable upon arrival and deployment of maintenance teams from the states to perform this maintenance. This is time consuming and costly.

Fifth is developing instruction on force protection requirements for officers and senior NCOs. Long term deployments put our personnel at risk of terrorist attacks such as Al Khobar Towers in June 1996. Team leadership felt unprepared in designing and constructing barriers to protect personnel and assets from such attacks. Additional training in this area should prepare team leaders for the increased focus on this requirement.

Sixth is to incorporate new methods for beddown planning into the Silver Flag training exercise. An example is using computer software programs available on the market. This team leader felt Silver Flag instructors purposefully write the exercise to avoid use of these software programs. Silver Flag staff confirmed this was to ensure all members knew how to conduct planning without high technology equipment. While the

team leader felt this was fine, he also felt training should teach personnel how to work smarter and faster. A greater number of teams are deploying with computer equipment. Thus, utilization of high technology equipment could expedite and improve this planning effort.

Seventh is to provide a greater depth of training on setup and maintenance of assets. Team leadership felt the same training every 24 months was not effectively advancing personnel on solutions to problems encountered in the field. They felt focus on orientation and a minimum level of proficiency the first two times was acceptable. Now the training needs to go beyond that to discuss and practice unique situations. In this way the training will continue to evolve, providing a new challenge during every rotation, and raising the proficiency of core team members.

Increasing the items in current training. One problem is training now focuses on performing tasks within a secure compound. Tasks under nation building operations have already taken teams out of these secure compounds, raising their vulnerability to terrorist attack. Other operations across the spectrum of conflict could also cause this to happen. Team leadership felt it was time to reteach convoy and personnel security procedures to protect our most valuable resource, people.

A second problem is equipment operators are losing their proficiency on heavy equipment. Team leadership felt day to day operations and beddown training does not exercise equipment operators enough. Rapid runway repair training during the 1980s concentrated on and continually challenged these personnel. These team leaders felt reinserting some equipment operation into these training scenarios would solve the problem.

AFCE Contingency Training, Mission and Capability

Sending people into combat without the proper training is tantamount to murder

—General George S. Patton, Jr.

This section looks at the mission and capability of current AFCE contingency training programs. The purpose is to provide background to support recommendations to resolve the training shortfalls identified in the previous section of this study. Programs detailed are:

1. Silver Flag Exercise Site at Tyndall AFB, Florida
2. 49th Materiel Maintenance Group (MMG) at Holloman AFB, New Mexico
3. Civil Engineer Schoolhouse at Sheppard AFB, Texas
4. Civil Engineer Maintenance, Inspection, Repair, and Training (CEMIRT) Team at Tyndall AFB, Florida
5. Air Mobility Warfare Center (AMWC) at Fort Dix, New Jersey

Silver Flag Exercise Site

As noted in Chapter 2, the Civil Engineering Readiness Training Site at Field 4, Eglin AFB, Florida, relocated to, and was renamed the Silver Flag Exercise Site, Tyndall AFB, Florida, in 1993. At this time the training also switched from focusing on Rapid Runway Repair (RRR) and Base Recovery After Attack (BRAAT) to force beddown and base recovery tasks. The specific purpose is “to provide crew task qualification free from home station constraints, where Prime BEEF...core crews can train, practice, and be qualified, on contingency operations in a realistic environment for rapid deployment, anytime...anywhere.”¹⁷ The specific guidance provided by AFCE leadership in 1992 was to:

1. Focus the curriculum on the personnel who will fill the critical¹⁸ unit type code (UTC) positions on Prime BEEF teams (see Appendix C)
2. Limit their attendance to six (6) days every two (2) years

3. Develop a SORTS-reportable¹⁹ task qualification program predicated on the Silver Flag Exercise program

Silver Flag provides training to approximately 132 personnel each week, according to CMSgt John R. Smith, III, Silver Flag Site Chief. These individuals consist of critical UTC personnel from two lead teams and two follow teams, or from four follow teams. Table 11 through 14 in Appendix C detail AFCE Prime BEEF team composition for lead and follow teams, including total and critical team members. This training, conducted a total of 36 weeks per year, maximizes utilization of the site given other commitments. These other commitments include four weeks the site is utilized for the Officer Field Education portion of the Contingency Engineering course taught at the Civil Engineering School, Air Force Institute of Technology, Wright-Patterson AFB, Ohio, five weeks for setup, conduct, and reconstitution for Readiness Challenge,²⁰ and the seven weeks containing holidays in which no training is conducted. According to CMSgt Smith, this schedule maximizes use of the facilities and 47 available Prime BEEF staff members.

Initiatives already underway to improve the Silver Flag training program include:

1. Incorporating small numbers of personnel being deployed to theater of operations with other teams already scheduled for training
2. Including members from non-UTC teams identified by MAJCOMs as requiring training to achieve their seven level qualification to perform unique day to day taskings
3. Increasing core team size to allow a greater number of UTC team members to receive the training
4. The Mission Ready Technician Program which requires technicians to show competency in contingency related items where the equipment is not available at home station.²¹

Initiative number three directly impacts training recommendations made by Prime BEEF team leadership during this study. The current plan is to increase the core team from its current size of approximately 35 percent of the total team to 55 percent.

Specifically, this increases the core team from 43 to 70 for lead teams and from 24 to 35 for follow teams.²² The increase in training is expected to offset the reduction in Prime BEEF teams caused by base realignments and closures and team realignment. Table 8 shows programmed Prime BEEF team reduction from early 1996 to late 1997. This is for both active duty and Air National Guard (ANG) and Air Force Reserve (AFRES) forces. Table 9 shows the impact of this reduction with the current core team size and with core team increases to 55 and 66 percent of the total team. Thus, a core team size of 55 percent is possible without increasing staff, facilities, or training schedule. An increase over 60 percent would require increasing those items. In today's austere fiscal environment, expansion could be hard to sell to senior leadership. This precipitates exploring other options to further increase training for AFCE Prime BEEF team members.

Table 8. Programmed AFCE Prime BEEF Team Reduction

Source	Jan 1996		Late 1997	
	Lead	Follow	Lead	Follow
Active Duty	41	72	41	41
ANG/AFRES	62	81	26	42

Source: Watkins, 20 February 1997.

Table 9. AFCE Prime BEEF Core Team Size Impact on Training Requirements

Core Team (% of total team)	35%		55%	66%
Team (AD & ARC) / Year	<u>1996</u>	<u>1997</u>	<u>1997</u>	<u>1997</u>
Lead	4429	2881	4690	5695
Follow	3672	1992	2905	3486
Total	8101	4873	7595	9181

49th Materiel Maintenance Group (49th MMG)

The 49th MMG is "responsible for the storage, inspection, repair, deployment, and accountability of Bare Base²³ assets belonging to Air Combat Command (ACC) and the

United States Central Air Forces (USCENTAF).” These assets are currently divided into two programs: Harvest Eagle belonging to ACC and Harvest Falcon belonging to USCENTAF. “The 49th MMG keeps this equipment in a high state of readiness to support worldwide contingencies, both wartime and peacetime.”²⁴

As a secondary mission, the 49th MMG trains both active duty and Air Reserve Component (ARC)²⁵ Civil Engineering Prime BEEF and RED HORSE personnel on equipment setup and maintenance.²⁶ There are two methods to conduct this training. At Holloman AFB, New Mexico, when 49 MMG personnel are not on Temporary Duty (TDY). Or by 49th MMG personnel via mobile training teams at the desiring unit’s home-station or at the deployed location. The 366th Training Flight at Sheppard AFB, Texas, leads this mobile training team concept.²⁷

Transporting assets to the unit’s home-station is the only limit on the mobile team providing training.²⁸ Instructors for these training programs, and the courses themselves, are fully Air Force certified.²⁹ Instruction at Holloman AFB consists of both classroom and hands-on training. However, problems have occurred in the past where teams deployed to Holloman AFB had to wait while 49th MMG personnel responded to real world situations requiring deployment of equipment, which is their primary mission.³⁰ This training can be for (1) periodic training on shelter setup and maintenance, (2) refresher training prior to deployed locations, (3) training at the deployed site to provide advice on setup location and procedures as well as teardown procedures, and (4) Readiness Challenge training assistance.³¹ Readiness Challenge is AFCE’s annual competition between teams representing each MAJCOM in contingency tasks.

The 49th MMG does not maintain a set schedule for training. They try to make themselves available upon request. However, the training is always subject to primary mission requirements, such as deploying equipment to support a real world deployment or providing assistance at a real world deployment location.³² Two other points are worth noting. First, this equipment is postured for short notice deployment, a 12-hour timeframe. Thus, training must not interfere with the capability to meet this requirement. Second, since the equipment is postured for real world deployment, its physical condition is always of concern since it is reportable to Headquarters Air Force monthly. The cost of this equipment is so high, that in this time of decreasing budgets no money is available to create training sets or to replace worn out equipment.³³

Civil Engineer Schoolhouse at Sheppard AFB, Texas

The 366th Training Flight at Sheppard AFB, Texas, conducts initial and supplemental technical training for all Civil Engineer technicians. Initial training consists of twelve Basic Apprentice Courses to provide basic operations and maintenance instruction on equipment used in their career fields. They conduct this initial technical training, the 366th's primary mission, prior to each members first duty station assignment. Supplemental training consists of 75 courses providing further training on career field equipment.³⁴

Current basic apprentice courses include very little training on contingency bare base assets. This is mainly classroom and video instruction. Hands on training is limited since the equipment has not been available to the schoolhouse. The first assets should arrive this fiscal year (FY) with a complete set planned for use by FY 2000.³⁵ This will allow full implementation of the Mission Ready Technician (MRT) program. The goal of the MRT

program is to provide bases with technicians who are ready to function in both day to day and contingency environments. Training will be on every piece of equipment within the technician's career field. It will also provide task certification on certain identified equipment. Thus, the contingency training portion of initial technical training is increasing significantly.³⁶

The problem has been getting logisticians who own the mobility basing sets to provide them for training. This has been slowly changing over the past ten years with equipment being obtained by the Silver Flag Exercise Site and hands on training incorporated for those items. The availability of fallout money in 1995 has fostered obtaining the first portion of a complete set for the Civil Engineering schoolhouse at Sheppard AFB.³⁷

To provide supplemental technical training, the 366th established courses focused on detailed operation and intermediate level maintenance of mobility basing sets.³⁸ These are a small number of the 75 supplemental training courses noted earlier. This contingency training was in response to the overwhelming requirement to train AFCE active duty and ARC personnel after Desert Storm in 1991.³⁹ These courses supplement that at Silver Flag by instructing AFCE technicians on intermediate level maintenance. Part of this effort is a mobile team, in conjunction with the 49th MMG, to train base personnel on setup and periodic maintenance of the mobility basing sets.⁴⁰

Civil Engineer Maintenance, Inspection, Repair, and Training (CEMIRT) Team

The Civil Engineer Maintenance, Inspection, Repair, and Training (CEMIRT) team is part of AFCESA at Tyndall AFB, Florida. It has two regions, one at Dover AFB, Delaware, and the other at Travis AFB, California. CEMIRT has both peacetime and

contingency functions—to maintain, inspect, and repair electrical, heating, and air conditioning equipment.

For its contingency function, CEMIRT has postured nine seven-person specialty Prime BEEF teams. Their purpose has been to deploy to theaters where electrical bare base assets are being used to perform intermediate and depot-level maintenance.⁴¹ This is normally an emergency situation as the assets, critical to bare base operations, are not functioning properly or at all. CEMIRT teams trouble shoot the systems and perform necessary maintenance to get them functioning. Assets include all types of generators and distribution centers, MAAS, and EALS. These teams normally use AFCE contingency team, Prime BEEF or RED HORSE, personnel assigned or deployed to the site to assist in trouble shooting and making repairs. This provides excellent hands-on training for those personnel.

Due to the current poor condition of bare base electrical assets, the number of emergency deployments for CEMIRT teams has been on the rise. To solve this problem, CEMIRT has developed a two part solution.⁴² First is to deploy several of their specialty Prime BEEF teams to Southwest Asia to inspect and repair all assets possible. Unrepairable assets will be sent for depot-level maintenance. The first of these teams deployed with a member of the 366th Training Flight in mid-March 1997. The second step involves developing training at CEMIRT's two regional sites. Through MAJCOM and unit scheduling, they will train identified AFCE contingency team personnel on inspection and maintenance of those assets. This will include intermediate and depot-level maintenance. Then AFCE contingency team personnel will be able to perform required

maintenance in the field, minimizing time delays and cost of deploying CEMIRT's specialty teams. This should also keep the assets in better condition.

Air Mobility Warfare Center At Fort Dix, New Jersey

The focus of the Air Mobility Warfare Center (AMWC), created in 1985, is to "educate mobility managers and customers to effectively integrate and employ the global air mobility process."⁴³ The focus is on supplementing Air Force level training with specific training for Air Mobility Command systems, procedures, or requirements.⁴⁴ Currently the AMWC offers eight courses relating to AFCE contingency operations. However, a curriculum study and revision are underway by Headquarters Air Mobility Command (AMC) Civil Engineering staff. This caused cancellation of four courses this fiscal year while the need for four other courses is being analyzed and possibly developed.

The remaining courses being offered include:

1. Contingency Air Base Operations—for Support Group Commanders and their contingency staff to integrate command center functions
2. Contingency Airfield Lighting—to educate AFCE technicians on unique lighting system requirements for AMC's large aircraft
3. Contingency Airfield Utilities—to educate AFCE officers and NCOs on application, use, operation, and reconstitution of unique equipment. These include the ROWPU, Rapid Utilities Repair Kit (RURK), and Bare Base Water Distribution System
4. Contingency Support Operations—to educate and exercise Support Group personnel from all career fields and of all ranks to work together as an integrated team.⁴⁵

To conduct these training classes, the AMWC has ten instructors in the applicable career fields of this study. They also have only certain mobility basing set items. These include the EALS, ROWPU, RURK, temper tents, and certain generators but not the MEP-12 750 KW diesel powered turbine generator. The number of instructors and

equipment will change based upon the result of the AMC Civil Engineer study being conducted in the spring of 1997.⁴⁶

Summary

In summary, the AFCE career field has been very responsive to required changes in contingency training. Considering the change in the security environment and experience in Desert Shield/Desert Storm, the training focus changed from RRR and BRAAT to force beddown and camp sustainment. According to interviews with team leadership, this switch has been very successful in preparing AFCE Prime BEEF team members for their roles in supporting operations across the spectrum of conflict. However, several suggestions will further improve that training. This will ensure preparation of AFCE personnel for their tasks into the future.

These suggestions will involve a number of AFCE organizations. The question arises as to what role each will play in preparing AFCE Prime BEEF team members for their future roles. Chapter 5, Conclusions and Recommendations, addresses this issue.

Notes

¹ New Mexico Engineering Research Institute (NMERI), xi.

² NMERI, II-124.

³ Ibid.

⁴ Watkins, 20 February 1997 and Smith, Joe, 20 February 1997.

⁵ Smith, Joe, 20 February 1997.

⁶ Watkins, 20 February 1997.

⁷ **Team and Tool Kits.** Prime BEEF UTCs will possess the full complement of team and tool kits per the ESL. Table of Allowance (TA) 429 contains equipment authorizations for engineer and fire protection UTCs, while TA 456 covers EOD UTCs and TA 459 covers disaster preparedness UTCs. These assets may also be used to satisfy training requirements. (AFI 10-210, 10)

Notes

⁸ **Harvest Falcon.** A nickname for an air-transportable package of hardwall shelters, tents, and equipment designed to support US Air Force personnel and aircraft under bare-base conditions in the USCENTCOM AOR. Harvest Falcon provides the capability to beddown 55,000 personnel and 750 aircraft. Sets of varying sizes can be independently deployed to 13 separate bare-base locations and 1 special operations force mobile operating location. The package is designed to overcome host nation or US infrastructure limitations and is prepositioned at planned operating bases, alternative AOR storage locations, or CONUS aggregation sites. Assets stored in the CONUS are available to support OPlan crises or contingencies worldwide. Prepositioned vehicles are also included. (AFI 10-209, 12)

⁹ **Harvest Eagle**—A nickname for an air-transportable package of housekeeping equipment, spare parts, and supplies required for support of US Air Force general purpose forces and personnel in bare-base conditions. Examples of Harvest Eagle equipment are water purification units, tents, and showers. Harvest Eagle is not intended to be an all-inclusive package of logistics support for sustained air operations; however, it may be used until augmented by Harvest Bare. (AFI 10-209, RED HORSE Program, 29 April 1994, pg. 12)

¹⁰ Smith, Joe, 6 February 1997.

¹¹ NMERI, II-124.

¹² Holtrop, 12 February 1997, and Gomez, 3 February 1997.

¹³ NMERI, 55.

¹⁴ Parmenter, 29 January 1997.

¹⁵ Ibid.

¹⁶ Joe Smith, 6 February 1997.

¹⁷ Silver Flag Exercise Site pamphlet, 1.

¹⁸ Critical personnel are defined as all nine and seven level technicians along with those five levels technicians in career fields determined vital to the mission or who require special training on equipment not available at home station due to safety requirements.

¹⁹ SORTS—Status Of Resources and Training System, monthly reports submitted by each unit to reflect the combat readiness status on team manning, training, and equipment.

²⁰ Periodic AFCE readiness competition where each MAJCOM sends a team to compete in various events that emphasize competency in wartime skills.

²¹ Smith, CMSgt John R., 12 February 1997.

²² Ibid. 18 March 1997

²³ Bare Base is defined as an austere location with a usable runway and a source of water which can be made potable. ("49th Materiel Maintenance Group Mission;" n.p.: on-line, Internet, 11 February 1997, available from <http://www.holloman.af.mil/49mmg>)

²⁴ Ibid.

²⁵ Air Reserve Component (ARC) includes Air National Guard and Air Force Reserve. (Watkins, 20 February 1997.)

²⁶ 49th Materiel Maintenance Group Mission;" n.p.: on-line, Internet, 11 February 1997, available from <http://www.holloman.af.mil/49mmg>.

²⁷ Smith, TSgt Boyd W., 13 March 1997.

Notes

- ²⁸ McConnell, 4 February 1997.
- ²⁹ Ibid.
- ³⁰ Smith, Joe, 20 February 1997.
- ³¹ McConnell, 4 February 1997.
- ³² Ibid.
- ³³ Smith, Joe, 20 February 1997.
- ³⁴ Park, 25 March 1997.
- ³⁵ Ibid.
- ³⁶ Mann, 18 March 1997.
- ³⁷ Smith, Joe, 18 March 1997.
- ³⁸ Intermediate level maintenance being that between periodic maintenance during operation and depot level requiring complete refurbishment. (Smith, Joe, 20 February 1997).
- ³⁹ Smith, Joe, 20 February 1997
- ⁴⁰ Smith, TSgt Boyd W., 13 March 1997.
- ⁴¹ Ramos, 24 March 1997.
- ⁴² Ibid.
- ⁴³ Headquarters, Air Mobility Warfare Center Curriculum Catalog, 3.
- ⁴⁴ Barry, 3 February 1997.
- ⁴⁵ Headquarters, Air Mobility Warfare Center Curriculum Catalog, 42-48.
- ⁴⁶ Barry, 14 March 1997.

Chapter 5

Conclusions and Recommendations

This chapter presents the conclusions and recommendations for this study. This includes the answers to the three research questions presented in Chapter 1. Also included are suggestions from Air Force Civil Engineer (AFCE) Prime Base Engineer Emergency Force (BEEF) team leadership to improve AFCE contingency training programs. This chapter concludes with recommendations to incorporate these suggestions and for further research along the lines of this study.

Conclusions

The following are the answers to the three research questions for this study. The first question asked—*are tasks AFCE Prime BEEF team personnel perform different across the full spectrum of conflict?* The answer is no, based upon interviews of AFCE Prime BEEF team leadership. The types of taskings they performed in contingency operations the last six years across the full spectrum of conflict all fall within the expected range as detailed in Joint Publication 4-04. Tasks were:

1. Beddown of forces to include billeting and shop/office space
2. Construction of furniture or special items to support mission or comfort of personnel
3. Protection of forces from terrorist or enemy attack
4. Construction management of contract work
5. Operation and maintenance of base and tent city facilities and utilities

6. Real estate acquisition to support the mission
7. Protecting the environment from unnecessary destruction or pollution

Differences noted were not in types of taskings performed but in the equipment used to perform those taskings and the depth to which the taskings were performed. Two noteworthy items relate to these differences. First, not all deployments are preplanned, have an operations plan or concept plan in place. Thus, AFCE Prime BEEF teams may not know what equipment will be available to support operations. This is especially true for short notice deployments to locations without pre-staged equipment.

This unfamiliarity could cause two problems. One is inability to operate the equipment, though AFCE personnel are resourceful and will eventually figure out the problem. The other is inability to troubleshoot equipment if it arrives or becomes inoperable. Both of these problems necessitate in-depth training on a wide variety of equipment, in-depth enough to be able to overhaul or troubleshoot the system.

Second is the depth of performance for certain tasks and control over task priority. For long-term deployments, quality of life projects become very important. These can greatly task AFCE Prime BEEF teams without controls upon the types and numbers of projects. Also, support to non-governmental agencies or intergovernmental agencies can cause confusion and frustration as they often do not fall under command of the senior military officer but require support to accomplish their mission. This necessitates prioritizing their requirements with military requirements, overseen by a single senior leader. This will ensure achievement of proper planning and performance.

The second research question asked—is current AFCE contingency training adequately preparing AFCE Prime BEEF team personnel to perform taskings across the

full spectrum of conflict? The answer is a resounding yes. Refocusing AFCE contingency training on beddown with specific instruction on setup and maintenance of Bare Base assets and maintaining a 24 month training frequency has paid great dividends; no teams reported shortfalls in supporting mission requirements. However, as noted in Chapter 4, lack of unique equipment at home station and only sending the core team to Silver Flag training results in a majority, approximately 65-70 percent of AFCE Prime BEEF team members never seeing the Harvest Falcon equipment until deployed in a time-critical situation. This is not the time to receive training as teams need to be able to hit the ground running. Thus, while AFCE contingency training is meeting the wing commanders' requirements, increasing this percentage must be a high priority.

The third research question asked—if the training is not adequate, what suggestions can improve this training so AFCE Prime BEEF team personnel are adequately trained to perform these taskings? Even though the training was determined to be adequate, AFCE Prime BEEF team leadership voiced eleven suggestions. These are consolidated in Chapter 4 with a brief discussion of each. Briefly stated, these suggestions are:

1. Increase the core team size of AFCE Prime BEEF teams attending AFCE contingency training.
2. Obtain unique bare base equipment for home-station training of non-core team personnel
3. Develop training material for advising officers and senior NCOs on the requirements and procedures for contract management in foreign countries
4. Modify the Silver Flag training scenario by placing greater emphasis on each phase of beddown, sustainment, teardown, and redeployment
5. Modify the Silver Flag training scenario by incorporating experienced shop personnel into the beddown planning exercise to capitalize on their expertise
6. Decrease the time-frame between training deployments to between 12 and 18 months to maximize knowledge retention and proficiency
7. Provide greater depth of training on maintenance of unique equipment, such as intermediate level maintenance

8. Modify the Silver Flag training scenario by including training on force protection requirements into classroom, beddown planning, and actual exercises
9. Provide greater in-depth training on setup and maintenance of Harvest Falcon assets by incorporating lessons learned on problems encountered in the field
10. Modify the Silver Flag training scenario by including training on and allowing use of advance technology during certain portions of the beddown planning exercise
11. Incorporate training on heavy equipment operations and convoy security procedures

Recommendations

AFCE Contingency Training

The question is—which AFCE contingency training program should incorporate which suggestions identified by AFCE Prime BEEF team leadership in this study? Part of answering this question is determining the future focus of each AFCE contingency training program. With implementation of the Mission Ready Technician program, the 366th Training Flight at Sheppard AFB will be providing detailed orientation and task certification on all bare base assets. This is an excellent initiative as it capitalizes on the expertise at the schoolhouse and minimizes impact to base units. Personnel cuts due to force drawdown and Civil Engineer reorganization efforts combined with increasing contingency operations tempo the past five years requires technicians arrive to their first unit fully qualified. This minimizes training time and cost to base units.¹ Recommend this effort be pushed for earliest implementation. This addresses leadership recommendations 7 and 9.

Recommend Silver Flag training focus on maximizing proficiency training in a simulated combat environment. First part of the week should focus on refresher training for unique assets not available at home station. The goal should be proficient operation and periodic maintenance of the equipment. An exercise at week's end should test

leadership and teamwork under the pressure and fog of war. This would bring the separate career fields together for a common cause, detailing the big picture of how each job impacts the wing's mission.

While facility and instructor limitations combined with the large number of AFCE Prime BEEF team members does not allow 100 percent of the team to attend training; Recommend they strive for a maximum percentage. As the number of AFCE Prime BEEF teams continues to change, given the rapidly changing security and fiscal environments, this percentage attending training should also change.

Four other recommendations are offered. First is to include maintaining the 24-month frequency for active duty and 36-month frequency for reserve component AFCE Prime BEEF team personnel. With the 366th providing initial training and certification, these intervals should be sufficient to maintain proficiency. Second is allowing substitution of personnel who have attended the last four or six years to increase exposure and personnel proficient in equipment operation.

Third is to consider changing the Status Of Resources and Training System (SORTS) reporting requirements. The goal is maintaining high combat readiness with minimal impact to day to day operations. With every technician receiving task certification at Sheppard AFB, the SORTS goal should be maximizing personnel receiving proficiency training at Silver Flag. Fourth is incorporating the various recommendations for modifying the Silver Flag scenario. These include incorporating high technology, contract management procedures in foreign countries, shop personnel in the beddown planning exercise, force protection issues and emphasis on teardown and redeployment of assets. These recommendations address leadership recommendations 1, 3, 4, 5, 6, 8, and 10.

Recommend the 366th Training Flight, 49th Materiel Maintenance Group and Civil Engineer Maintenance, Inspection, Repair and Training teams cooperatively focus on two issues. First is the mobile training team effort to aid bases in performing home station training. Providing bases equipment they do not own with qualified instructors would allow all personnel to maintain proficiency. Second is training specifically identified technicians too intermediate and depot-level maintenance capabilities. This will aid units supporting contingency missions without delay and at minimal cost in time and dollars. Recommend efforts to establish these programs continue. Also recommend Headquarters Air Force and MAJCOM readiness staffs determine what the right mix is requiring this detailed training. Once determined, all levels should emphasize the availability of the mobile training team and training courses. These recommendations address leadership recommendations 2, 7, and 9.

Recommend the Air Mobility Warfare Center at Fort Dix, New Jersey, provide only training unavailable from the three sources above. This should be for equipment or situations unique to Air Mobility Command. Each command duplicating training sites is similar to the study exploring regional training sites.² The cost of assets, facilities, and manpower caused this concept to be dropped.³

Finally, each unit should continue to expand their home station training program. Ingenuity and creativity can overcome many training requirements that do not fit in the time or focus of the training sites above. An example is recommendation 11, heavy equipment operation and convoy security procedures.

Further Research Efforts

This study has provided the background required for a detailed study of how best to use AFCE contingency training sites. Details to be explored are space and faculty requirements to meet the needs of AFCE Prime BEEF teams while avoiding duplicity of effort. Each location should have a specific mission to maximize cost effectiveness and minimize staffs.

The same basic study should be conducted for RED HORSE, Prime BEEF fire fighting, Explosive Ordnance Disposal, and Disaster Preparedness teams. This would verify if their tasks are consistent across the full spectrum of conflict and if their training programs are adequately preparing them for those tasks.

Notes

¹ Park, 25 March 1997.

² Cox.

³ Smith, Joe, 6 February 1997.

Appendix A

AFCE Prime BEEF Team Leadership Questionnaire

Tier One

Home station unit/base:

Deployment timeframe and duration:

Prime BEEF team size and AFSC composition (separate from other engineers present):

Deployment location:

Deployed location mission (purpose, units supported, etc. to include personnel and aircraft):

Other engineers on site:

Tier Two

Equipment taken with (standard Prime BEEF team kit or modified kit):

What equipment provided at location (i.e. Harvest Eagle, Falcon, other?):

Tier Three

Taskings completed (as specific as possible to characterize):

Tier Four

Training prior to deployment (time since team at Silver Flag and currency of home-stations training):

Shortfalls in task/mission accomplishment:

Adequacy of training (Home station and Silver Flag):

Desired training to overcome shortfalls, in retrospect:

Appendix B

AFCE Prime BEEF Leadership Interview Data

Table 10 in this appendix summarizes information from interviews of AFCE Prime BEEF Team Leadership. This information is used in Chapter 4. The information is summarized in sections on each type of deployment. Then recommendations from team leadership are categorized and explained.

Table 10. AFCE Prime BEEF Team Leadership Interview Data (continued)

<u>Mission</u>		<u>Taskings</u>		<u>Recommendations</u>
AEF	Air Expeditionary Force	CN	Construction - community	1. Increase core team size sent to Silver Flag (SF) training
DS	Desert Strike (Saudi Arabia)	CR	Crash Rescue	2. Need unique equipment at home-station for training non-core team
DS/DS	Desert Shield/ Desert Storm (Saudi Arabia)	EALS	Emergency Airfield Lighting System	3. Need contract management training on requirements and procedures in foreign countries for officer and senior NCOs
ER	Ensured Response (Liberia)	FB	Force Beddown	4. Need to place greater emphasis on beddown, sustainment, teardown, and redeployment at SF training
JC	Just Cause (Panama)	FP	Force Protection	5. Need to improve SF beddown exercise by including experienced shop personnel
JE	Joint Endeavor (Bosnia)	M	Camp Maintenance	6. Need to decrease frequency of SF training to 12 to 18 months
NH	Nuevos Horizontes (Honduras & El Salvador)	SR	Snow Removal	7. Need to provide a greater depth of training on maintenance of unique equipment, such as intermediate level maintenance
OPC	Operation Provide Comfort (Turkey & Iraq)			8. Need training for officers and senior NCOs on force protection
PC	Phoenix Camel (Egypt)			9. Need to provide in-depth training on setup and maintenance of Harvest Falcon assets
SW	Southern Watch (Saudi Arabia)			10. Need to incorporate new methods of beddown planning into SF exercise, such as computer software
UFL	Ulchi Focus Lens (Korea)			11. Need greater proficiency on heavy equipment operation and convoy procedures

Appendix C

AFCE Prime BEEF Unit Type Code (UTC) Structure

Active duty engineer, fire protection, & disaster preparedness force to support regional conflict missions at contingency operating locations, aerial ports, en-route bases, or critical stateside bases. Provides initial beddown for up to 1200 personnel and a lead aviation squadron using expedient or existing facilities as well as sustainment support of facilities and utilities. When provided with 2 P-19s, 1 P-20, & 1 P-10 (or equivalent fire vehicles), provides 24-hour aircraft fire fighting support & limited structural, fuel, & munitions fire support. Provides command and control; coordinates conventional warfare survivability and defense; and coordinates nuclear, biological, and chemical warfare defense. Individual mobility equipment; consolidated tool kits; firefighter protective clothing; team kit and equipment; and Disaster Preparedness (DP)/Nuclear, Biological, and Chemical (NBC) support equipment are required. Base Operating Support (BOS) required. 32E3X positions can be filled by 32E3 officers holding any specialty suffix.

Table 11. UTC 4F9E5, Active Duty Prime BEEF Lead Team

Title	AFSC	Grade	Total Quantity	Core Team	Critical
Civil Engineer Staff Officer	32E3	05	1	1	1
First Sergeant	8F000		1	0	0
Civil Engineer Staff Officer	32E3	04	1	0	0
Civil Engineer Officer, General	32E3G	03	3	2	2
Readiness Flight Officer	32E3B/D	03	1	1	1
Civil Engineer Manager	3E000		1	1	1
Electrical System Apprentice	3E031		4	0	0
Electrical System Journeyman	3E051		7	3	3
Electrical System Craftsman	3E071		2	1	1
Electrical Superintendent	3E090		1	0	0
Electrical Power Production Apprentice	3E032		2	0	0
Electrical Power Production Journeyman	3E052		4	2	2
Electrical Power Production Craftsman	3E072		1	1	1

Table 11—continued

Title	AFSC	Grade	Total Quantity	Core Team	Critical
HVACR Apprentice	3E131		4	0	0
HVACR Journeyman	3E151		7	2	2
HVACR Craftsman	3E171		3	1	1
Pavement & Construction Equipment Apprentice	3E231		3	0	0
Pavement & Construction Equipment Journeyman	3E251		6	4	4
Pavement and Construction Equipment Craftsman	3E271		3	2	2
Pavement and Construction Equipment Superintendent	3E291		1	0	0
Structural Apprentice	3E331		3	0	0
Structural Journeyman	3E351		6	2	2
Structural Craftsman	3E371		3	0	0
Structural Superintendent	3E391		1	0	0
Utilities System Apprentice	3E431		4	0	0
Utilities System Journeyman	3E451		9	3	3
Utilities System Craftsman	3E471		3	1	1
Utilities System Superintendent	3E491		1	0	0
Liquid Fuels System Apprentice	3E432		1	0	0
Liquid Fuels System Journeyman	3E452		1	1	1
Liquid Fuels System Craftsman	3E472		1	0	0
Pest Management Journeyman	3E453		1	0	0
Environmental Management Craftsman	3E473		1	0	0
Engineering Apprentice	3E531		2	0	0
Engineering Journeyman	3E551		2	2	2
Engineering Craftsman	3E571		1	1	1
Engineering Support	3E591		1	0	0
Force Management Apprentice	3E631		2	0	0
Force Management Craftsman	3E671		2	2	2
Fire Protection Apprentice	3E731		7	0	0
Fire Protection Journeyman	3E751		11	4	4
Fire Protection Craftsman	3E771		5	3	3
Fire Protection Superintendent	3E791		1	1	1
Disaster Preparedness Journeyman	3E951		2	1	1
Disaster Preparedness Craftsman	3E971		1	1	1
Inventory Management Journeyman	2S051		3	0	0
Inventory Management Craftsman	2S071		1	0	0
Total			132	43	43

Air National Guard (ANG) and AF Reserve (AFRES) engineer and DP force to support regional conflict missions at contingency operating locations, aerial ports, en-route bases, or critical CONUS bases. Provides initial beddown for up to 1200 personnel & a lead squadron using expedient or existing facilities, & sustainment support of facilities & utilities. When combined with 1 4F9F3 & associated fire vehicles, provides 24-hour aircraft fire fighting support & limited structural, fuel, & munitions fire support. Provides engineer command & control, coordinates conventional warfare survivability & defense, & coordinates NBC warfare defense. Individual mobility equipment, consolidated tool kits, team kit & equipment, & DP/NBC support equipment are required. BOS required. 32E3X positions can be filled by any 32E3 officers.

Table 12. UTC 4F9E6, ANG/AFRES Prime BEEF Lead Team

Title	AFSC	Grade	Total Quantity	Core Team	Critical
Civil Engineer Staff Officer	32E3	05	1	1	1
First Sergeant	8F000		1	0	0
Information Management Journeyman	3A051		1	0	0
Personnel Management	3S071		1	0	0
Training Manager	3S271		1	0	0
Civil Engineer Staff Officer	32E3	04	1	0	0
Civil Engineer Officer, General	32E3G	03	3	2	2
Readiness Flight Officer	32E3B/D	03	1	1	1
Civil Engineer Manager	3E000		1	1	1
Electrical System Journeyman	3E051		8	3	3
Electrical System Craftsman	3E071		5	1	1
Electrical Superintendent	3E090		1	0	0
Electrical Power Production Journeyman	3E052		4	2	2
Electrical Power Production Craftsman	3E072		3	1	1
HVACR Journeyman	3E151		8	2	2
HVACR Craftsman	3E171		5	1	1
HVACR Superintendent	3E191		1	0	0
Pavement & Construction Equipment Journeyman	3E251		7	4	4
Pavement and Construction Equipment Craftsman	3E271		5	2	2
Pavement and Construction Equipment Superintendent	3E291		1	0	0
Structural Journeyman	3E351		7	2	2
Structural Craftsman	3E371		5	0	0

Table 12—continued

Title	AFSC	Grade	Total Quantity	Core Team	Critical
Structural Superintendent	3E391		1	0	0
Utilities System Journeyman	3E451		9	3	3
Utilities System Craftsman	3E471		7	1	1
Utilities System Superintendent	3E491		1	0	0
Liquid Fuels System Journeyman	3E452		1	1	1
Liquid Fuels System Craftsman	3E472		2	0	0
Pest Management Journeyman	3E453		1	0	0
Environmental Management Craftsman	3E473		1	0	0
Engineering Journeyman	3E551		3	2	2
Engineering Craftsman	3E571		2	1	1
Engineering Superintendent	3E591		1	0	0
Force Management Craftsman	3E671		3	3	3
Force Management Superintendent	3E691		1	0	0
Disaster Preparedness Journeyman	3E951		2	1	1
Disaster Preparedness Craftsman	3E971		1	1	1
Inventory Management Journeyman	2S051		3	0	0
Inventory Management Craftsman	2S071		1	0	0
Total			111	36	36

Active Duty engineer, fire protection, and DP force to support regional conflict missions at contingency operating location, aerial port, en-route base, or critical CONUS base. Augments 4F9E5/6 to provide beddown support using expedient or existing facilities as well as sustainment support of facilities and utilities for lead/follow (L/F) squadrons. When combined with 4F9E5/6 and provided an additional P-19 fire truck, provides 24-hour aircraft fire support for L/F squadrons and limited structural, fuel, and munitions fire support. Enables 4F9E5/6 to provide 24-hour engineer command and control; coordinate conventional warfare survivability and defense; coordinate NBC warfare defense; and conduct DP training. Individual mobility equipment; consolidated tool kits; firefighter protective clothing; team kit and equipment; and DP/NBC support equipment required. BOS required. 32E3X positions can be filled by 32E3 officers holding any specialty suffix.

Table 13. UTC 4F9E7, Active Duty Prime BEEF Follow Team

Title	AFSC	Grade	Total Quantity	Core Team	Critical
CE Staff Officer	32E3	04	1	1	1
CE Officer, General	32E3G	03	1	1	1
Electrical System Apprentice	3E031		2	0	0
Electrical System Journeyman	3E051		3	2	2
Electrical System Craftsman	3E071		1	1	1

Table 13—continued

Title	AFSC	Grade	Total Quantity	Core Team	Critical
Electrical Power Production Apprentice	3E032		2	0	0
Electrical Power Production Journeyman	3E052		4	2	2
Electrical Power Production Craftsman	3E072		1	0	0
HVACR Apprentice	3E131		2	0	0
HVACR Journeyman	3E151		2	1	1
HVACR Craftsman	3E171		1	0	0
HVACR Superintendent	3E191		1	0	0
Pavement & Construction Equipment Apprentice	3E231		2	0	0
Pavement & Construction Equipment Journeyman	3E251		3	1	1
Pavement and Construction Equipment Craftsman	3E271		1	1	1
Structural Apprentice	3E331		3	0	0
Structural Journeyman	3E351		4	1	1
Structural Craftsman	3E371		1	1	1
Utilities System Apprentice	3E431		3	0	0
Utilities System Journeyman	3E451		3	3	3
Utilities System Craftsman	3E471		1	1	1
Liquid Fuels System Journeyman	3E452		1	1	1
Pest Management Journeyman	3E453		1	0	0
Engineering Journeyman	3E551		1	0	0
Engineering Craftsman	3E571		1	1	1
Fire Protection Apprentice	3E731		3	0	0
Fire Protection Journeyman	3E751		6	3	3
Fire Protection Craftsman	3E771		3	1	1
Disaster Preparedness Journeyman	3E951		2	1	1
Disaster Preparedness Craftsman	3E971		1	1	1
Total			61	24	24

ANG/AFRES engineer & DP force to support regional conflict missions at contingency operating locations, aerial port, en-route base, or critical CONUS base. Augments 4F9E5/6 to provide beddown support using expedient or existing facilities & sustainment support of facilities & utilities for a lead/follow (L/F) squadron. When combined with 4F9F3/F4 & associated vehicles, provides 24-hour fire fighting support for a L/F squadron & limited structural, fuel, & munitions fire support. Extends the capability of a lead team to provide 24-hour command & control, coordinate conventional warfare survivability & defense, coordinate NBC warfare defense, & conduct DP training. Individual mobility equipment, consolidated tool kits, team kit & equipment, & DP/NBC

support equipment are required. BOS required. 32E3X positions can be filled by any 32E3 officers. For locations posturing 2 or more 4F9E8 UTCs, AFSs 32E3, 3S071, & 3E691 are substituted with AFSs 32E3 grade 05, 3A071, & 3E000 respectively for 1st UTC postured.

Table 14. UTC 4F9E8, ANG/AFRES Prime BEEF Follow Team

Title	AFSC	Grade	Total Quantity	Core Team	Critical
CE Staff Officer	32E3	04	1	1	1
CE Officer, General	32E3G	03	1	1	1
Engineer Manager	3E000		1	0	0
Electrical System Journeyman	3E051		4	2	2
Electrical System Craftsman	3E071		2	1	1
Electrical System Superintendent	3E091		1	0	0
Electrical Power Production Journeyman	3E052		4	2	2
Electrical Power Production Craftsman	3E072		2	0	0
HVACR Journeyman	3E151		3	1	1
HVACR Craftsman	3E171		2	0	0
HVACR Superintendent	3E191		1	0	0
Pavement & Construction Equipment Journeyman	3E251		3	1	1
Pavement and Construction Equipment Craftsman	3E271		2	1	1
Pavement and Construction Equipment Superintendent	3E291		1	0	0
Structural Journeyman	3E351		5	1	1
Structural Craftsman	3E371		2	1	1
Utilities System Journeyman	3E451		4	3	3
Utilities System Craftsman	3E471		2	1	1
Utilities System Superintendent	3E491		1	0	0
Liquid Fuels System Journeyman	3E452		2	1	1
Pest Management Journeyman	3E453		1	0	0
Engineering Journeyman	3E551		1	0	0
Engineering Craftsman	3E571		1	1	1
Force Management Craftsman	3E671		1	1	1
Force Management Superintendent	3E691		1	0	0
Disaster Preparedness Journeyman	3E951		1	1	1
Disaster Preparedness Craftsman	3E971		1	1	1
Disaster Preparedness Superintendent	3E991		1	0	0
Personnel Craftsman	3S071		1	0	0
Education & Training Craftsman	3S271		1	0	0
Inventory Management Craftsman	2S071		1	0	0
Total			55	21	21

Glossary

Section A—Acronyms and Definitions

<i>Acronyms</i>	<i>Definitions</i>
AB	Air Base
ACC	Air Combat Command
ACSC	Air Command and Staff College
AETC	Air Education and Training Command
AFB	Air Force Base
AFCE	Air Force Civil Engineer
AFCESA	Air Force Civil Engineer Support Agency
AFDD	Air Force Doctrine Document
AFESC	Air Force Engineering and Service Center
AFI	Air Force Instruction
AFIT	Air Force Institute of Technology
AFM	Air Force Manual
AFMC	Air Force Materiel Command
AFP	Air Force Pamphlet
AFR	Air Force Regulation
AFRES	Air Force Reserve
AFS	Air Force Specialties
AFSPC	Air Force Space Command
AIS	Air Installations Sector
AMC	Air Mobility Command
AMWC	Air Mobility Warfare Center
ANG	Air National Guard
ARC	Air Reserve Component (ANG and AFRES)
AU	Air University
AWC	Air War College
BEEF	Base Engineer Emergency Force
BRAAT	Base Recovery After Attack
CEMIRT	Civil Engineer Maintenance, Inspection, Repair, and Training Team
CEX	Civil Engineer Readiness Director
CONPLAN	Concept Plan
CONUS	Continental United States

DOD	Department of Defense
EALS	Emergency Airfield Lighting System
ECU	Environmental Control Unit
EOD	Explosive Ordnance Disposal
HA	Humanitarian Assistance
HVACR	Heating, Ventilation, Air Conditioning, and Refrigeration
KW	Kilowatt
MAAS	Mobil Aircraft Arresting System
MAJCOM	Major Command
MEP	Mobile Electrical Power
MMG	Materiel Maintenance Group
MOOTW	Military Operations Other Than War
MOBSS	Mobility Support Squadron
MRC	Major Regional Conflict
NCOs	Noncommissioned Officers
NCOIC	Noncommissioned Officer-In-Charge
NEO	Noncombatant Evacuation Operation
OIC	Officer-In-Charge
OPLAN	Operations Plan
RED HORSE	Rapid Engineer Deployable, Heavy Operational Repair Squadron, Engineering
ROWPU	Reverse Osmosis Water Purification Unit
RRR	Rapid Runway Repair
RURK	Rapid Utility Repair Kit
SCARWAF	Special Category Army with the Air Force
SORTS	Status of Resources and Training System
TDY	Temporary Duty
TPFDD	Time Phased Force Deployment Data
US	United States
USACOE	United States Army Corps of Engineers
USAF	United States Air Force
USCENTAF	United States Central Command Air Forces
UTC	Unit Type Code

Section B—Terms and Definitions

- Base Recovery After Attack (BRAAT).** A theater concept of recovering a base after conventional attack when restoring flying operations is the first priority. The installation may concurrently conduct other recovery activities, but only if these activities do not impede the effort to resume flying operations. (AFI 10-211, *Civil Engineer Contingency Response Planning*, 31 March 1994, 11)
- Contingency.** An emergency involving military forces caused by natural disasters, terrorists, subversives, or by required military operations. Due to the uncertainty of the situation, contingencies require plans, rapid response, and special procedures to ensure the safety and the readiness of personnel, installations, and equipment. (AFI 10-211, *Civil Engineer Contingency Response Planning*, 31 March 1994, 11)
- Force Beddown.** The provision of expedient facilities to those for troop support to provide a platform for the projection of force. These facilities may include modular or kit-type substitutes. (AFI 10-211, *Civil Engineer Contingency Response Planning*, 31 March 1994, 12)
- Harvest Bare.** A nickname for an air-transportable package of modular shelters, equipment, and vehicles required for base and personnel housekeeping and aircraft support in bare base conditions. Base and personnel support packaging consists of modular hardwall shelters and equipment designed to house, feed, and conduct normal functions of a combat support unit. Aircraft support consists of maintenance shelters, operations shelters, and shop equipment required to support an operational unit. (AFI 10-209, RED HORSE Program, 29 April 1994, pg. 12)
- Harvest Eagle.** A nickname for an air-transportable package of housekeeping equipment, spare parts, and supplies required for support of US Air Force general purpose forces and personnel in bare-base conditions. Examples of Harvest Eagle equipment are water purification units, tents, and showers. Harvest Eagle is not intended to be an all-inclusive package of logistics support for sustained air operations; however, it may be used until augmented by Harvest Bare. (AFI 10-209, RED HORSE Program, 29 April 1994, pg. 12)
- Harvest Falcon.** A nickname for an air-transportable package of hardwall shelters, tents, and equipment designed to support US Air Force personnel and aircraft under bare-base conditions in the USCENTCOM AOR. Harvest Falcon provides the capability to beddown 55,000 personnel and 750 aircraft. Sets of varying sizes can be independently deployed to 13 separate bare-base locations and 1 special operations force mobile operating location. The package is designed to overcome host nation or US infrastructure limitations and is prepositioned at planned operating bases, alternative AOR storage locations, or CONUS aggregation sites. Assets stored in the CONUS are available to support OPlan crises or contingencies worldwide. Prepositioned vehicles are also included. (AFI 10-209, RED HORSE Program, 29 April 1994, pg 12)
- Prime BEEF Team and Individual Tool Kits.** Prime BEEF UTCs will possess the full complement of team and individual tool kits per the Equipment and Supplies Listing. Table of Allowance (TA) 429 contains equipment authorizations for engineer and fire protection UTCs, while TA 456 covers EOD UTCs and TA 459 covers disaster

preparedness UTCs. These assets may also be used to satisfy training requirements. (AFI 10-210, The Prime Base Engineer Emergency Force (BEEF) Program, 29 April 1994, pg. 10)

Rapid Runway Repair (RRR). The process of using construction equipment, tools, portable equipment, expendable supplies, and temporary surfacing materials to provide a minimum operating surface through expedient repair methods. (AFM 11-1, cited in AFI 10-211, *Civil Engineer Contingency Response Planning*, 31 March 1994, 12)

Time-Phased Force and Deployment Data (TPFDD). The computer-supported database portion of an operation plan that contains time-phased force deployment data, nonunit-related cargo and personnel data, and movement data for the operation plan. (AFI 10-209, RED HORSE Program, 29 April 1994, pg. 13)

Unit Type Code (UTC). A five-character, alphanumeric code that uniquely identifies each type unit of the Armed Forces. (Joint Pub 1-02)

Bibliography

- 49th Materiel Maintenance Group Mission." n.p. On-line. Internet, 11 February 1997.
Available from <http://www.holloman.af.mil/49mmg>.
- Air Force Doctrine Document 42, *Civil Engineer*, 28 Dec 94.
- Air Force Instruction 10-209, *RED HORSE Program*, 29 April 1994.
- Air Force Instruction 10-210, *The Prime Base Engineer Emergency Force (BEEF) Program*, 29 April 1994.
- Air Force Instruction 10-211, *Civil Engineer Contingency Response Planning*, 31 March 1994.
- Air Force Manual, 3-2, *Civil Engineering Combat Support Doctrine*, 26 April 1991.
- Air Force Pamphlet 10-219, Volume 1, *Contingency and Disaster Planning*, 1 December 1995.
- Air Force Pamphlet 93-7, *The Prime BEEF Manager's Handbook*, 12 December 1983.
- Air Force Regulation 93-3, *The Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program*, 22 December 1982.
- Ashdown, Lt Col, Floyd A. "A History of the Warfighting Capability of Air Force Civil Engineering." Research Report no. AU-AWC-84-011. Maxwell AFB, Ala.: Air War College, May 1984.
- Barela, Timothy P., Rumble in the Jungle, *Airman Magazine*, November 1995.
- Barry, SMSgt William, D. Superintendent, Education Support Division, Air Mobility Warfare Center, Fort Dix, NJ, Telephone Interview, 3 February 1997 and 14 March 1997
- Batar, TSgt Ed. Structures Technician, 21st Civil Engineer Squadron, Peterson AFB, CO, Telephone Interview, 21 January 1997.
- Boone, Maj Timothy. Chief, Contingency Operations Division, Headquarters, Air Mobility Command, Scott AFB, IL, Telephone Interview, 17 December 1997.
- Brown, David A.; Hartzler, Ronald B.; Kelly, Mike; and Landroche, Cathy, Bosnia Report: Civil Engineer support to Operation Joint Endeavor, *The Civil Engineer Magazine*, Vol. 4, No 1, Spring 1996.
- Burrick, 1st Lt Bo. Readiness Officer, 30th Civil Engineering Squadron, Vandenberg AFB, CA, Telephone Interview, 24 January 1997
- Cannan, Maj David M. "Base-Level Civil Engineering Forces of the 21st Century." Research Report no. AU-ACSC 84-0430. Maxwell AFB, Ala.: Air Command and Staff College, April 1984.
- Cannon, Billie. Training Manager, Power Production, 366th Training Flight, Sheppard AFB, TX, Telephone Interview, 18 March 1997.
- Cisneros, C.J. Deputy Chief, Readiness Directorate, Air Education and Training Command, Randolph AFB, TX, Telephone Interview, 17 December 1997.

- Clouse, MSgt Jeff. Superintendent, Readiness Directorate, 75th Civil Engineer Group, Hill AFB, UT, Telephone Interview, 22 January 1997.
- Collier, MSgt Gordon. Acting Chief, Facilities, 62nd Civil Engineer Squadron, McChord AFB, WA, Telephone Interview, 27 January 1997.
- Cox, Capt Ernest A. Jr. "Options for Regional Readiness Training Sites for Air Force Civil Engineering and Services." Research Report no. AFIT-GEM-XPO-87S-3. Wright-Patterson AFB, Ohio: Air Force Institute of Technology, September 1987.
- Damas, 1st Lt Anthony M. Chief Maintenance Engineering, 30th Civil Engineering Squadron, Vandenberg AFB, CA, Telephone Interview, 13 February 1997.
- Daniels, Capt Darren. Executive Officer to the Civil Engineer, Headquarters, Air Force Space Command, Peterson AFB, CO, Telephone Interview, 17 December 1996
- Department of the Air Force, TIG Report, *Functional Management Inspection of Civil Engineering Readiness*, PN 81-612. Washington: HQ USAF, February 1981 to 8 January 1982.
- Downs, MSgt Timothy. Foreman, Exterior Electric Shop, 62nd Civil Engineer Squadron, McChord AFB, WA, Telephone Interview, 27 January 1997.
- Fowler, Dave. Training Manager, Pavements and Equipment and Structures, 366th Training Flight, Sheppard AFB, TX, Telephone Interview, 14 March 1997.
- Gomez, Maj Ed. Privatization Program Manager, Air Mobility Command, Scott AFB, IL, Telephone Interview, 3 February 1997.
- Hartzer, Dr. Ronald B. Civil Engineer Historian, Headquarters Air Force Civil Engineer Support Agency, Tyndall AFB, FL, Telephone Interview, 17 December 1996 and 13 March 1997.
- Hartzer, Dr. Ronald B. Air Force Civil Engineers: Building Air Power's Foundation, *Engineer Magazine*, Vol. 24, August 1995.
- Hartzer, Dr. Ronald B. Engineers and Natural Disaster Recovery, *The Civil Engineer*, Vol. 3, No 3, pg. 16-17,27, Winter 1995.
- Hartzer, Dr. Ronald B. AFCEA Historian, Hiding from Sight, Camouflage in World War II. *The Civil Engineer*, Vol. 4, No 1, page 24-25, Spring 1996.
- Hartzer, Dr. Ronald B. Validating Air Force Civil Engineering Combat Support Doctrine in the Gulf War, *Air Power Journal*, Vol. 8, Issue 2, Summer 1994
- Headquarters, Air Mobility Warfare Center, *Curriculum Catalog*, July 1996.
- Hicks, Lt Col (Ret) Alfred B. Environmental Program Manager, CH2M Hill, Reston VA, Telephone Interview, 12 February 1997.
- Hicks, Major Alfred B. "Statements of Belief Relating to the Combat Employment of Civil Engineering Forces." Research Report no. AU-ACSC 86-1120. Maxwell AFB, Ala.: Air Command and Staff College, April 1986.
- Holtrop, Capt Joel N. Chief, Readiness Flight, 366th Civil Engineer Squadron, Mountain Home AFB, ID, Telephone Interview, 12 February 1997.
- Jeffreys, Col John J. Chief, Readiness Division, Headquarters Air Combat Command, Langley AFB, VA, Telephone Interview, 20 December 1996.
- Joint Publication 1, *Joint Warfare of the Armed Forces of the United States*, 10 January 1995, Washington, DC.
- Joint Publication 1-02, *DOD Dictionary Military and Associated Terms with JMTGM changes*, 23 March 1994, Washington DC.

- Joint Publication 3-07, *Joint Doctrine for Military Operations Other Than War*, 26 September 1995, Washington, DC.
- Joint Publication 4-04, *Joint Doctrine for Civil Engineering Support*, 26 September 1995, Washington DC.
- Johnson, Admiral Jay L. Chief of Naval Operations, Pentagon, Washington, DC Address to Air Command and Staff College students. Air Command and Staff College, Maxwell AFB, AL, 7 February 1997.
- Jordan, MSgt Ronald. NCOIC, Generator Maintenance, 347th Civil Engineer Squadron, Moody AFB, GA, Telephone Interview, 3 February 1997.
- Joyner, Bo. Reserve construction project brings hope to poor Honduran village. *The Civil Engineer*, Vol. 4, No 2, page 21, Summer 1996.
- Kishiyama, Col Arthur Y. "The Relevance of Doctrine to Air Force Civil Engineering." Research Report no. AU-AWC-85-107. Maxwell AFB, Ala.: Air War College, May 1985.
- Klepp, Mike. Liquid Fuels Single Point Manager, 366th Training Flight, Sheppard AFB, TX, Telephone Interview, 18 March 1997.
- Lauson, Maj Gary B. "Civil Engineering Combat Experiences During the Vietnam War." Research Report no. AFIT-GEM-DEE-89S-11. Wright-Patterson AFB, Ohio: Air Force Institute of Technology, September 1989.
- Lee, Major Irv. Commander, 510th Civil Engineer Squadron, US Air Force Academy, CO, Telephone Interview, 13 January 1997.
- Mann, TSgt Steven T. HVAC Technical Training Instructor, Contingency Area, 366th Training Flight, Sheppard AFB, TX, Telephone Interview, 18 March 1997.
- May, TSgt Adrian P. Equipment Operator, 82nd Civil Engineer Squadron, Sheppard AFB, TX, Telephone Interview, 10 January 1997.
- McCants, CMSgt Carl E. Readiness Manager, Headquarters, Air Force Space Command, Peterson AFB, CO, Telephone Interview, 17 December 1996.
- McConnell, Col Bruce F. Commander, 49th Materiel Maintenance Group, Holloman AFB, NM. Telephone Interview, 4 Feb 97.
- Morris, Capt William C. "Analysis of the Perceived Adequacy of Air Force Civil Engineering Prime BEEF Training." Research Report no. AFIT-GEM-DET-85S-16. Wright-Patterson AFB, Ohio: Air Force Institute of Technology, September 1984.
- Muser, 1st Lt Andy. Readiness Officer, 88th Civil Engineer Group, Wright-Patterson AFB, OH, Telephone Interview, 29 January 1997.
- "National Security Act of 1947." Public Law 253 (80th Congress, 1st Session) 26 July 1947, *United States Statutes at Large*, Vol 1, Part 1, 61 Stat. 343, Government Printing Office, Washington DC, 1948.
- Nelson, Capt Rebecca A. Environmental Engineer, 375th Civil Engineer Squadron, Scott AFB, IL, Telephone Interview, 6 February 1997.
- New Mexico Engineering Research Institute, *Lessons Learned by Civil Engineering, Services, Air Base Operability, Disaster Preparedness, and Explosive Ordnance Disposal during DESERT SHIELD/DESERT STORM/PROVEN FORCE/PROVIDE COMFORT*, 1992, Albuquerque, NM.
- Papp, Daniel S., *Contemporary International Relations, Frameworks For Understanding*. New York: Macmillan College Publishing Company, inc., 1991.

- Park, CMSgt Richard D. Civil Engineer Manager, 366th Training Flight, Sheppard AFB, TX, Telephone Interview, 25 March 1997.
- Parmenter, Capt Randy. Chief, Readiness Directorate, 88th Civil Engineer Group, Wright-Patterson AFB, OH, Telephone Interview, 29 January 1997.
- Purvis, Col Quincy D. Commander, 49th Materiel Maintenance Group, Holloman AFB, NM, Telephone Interview, 6 February 1997.
- Ramos, CMSgt Ercilia H. CEMIRT Operations and Readiness Manager, Air Force Civil Engineering Support Agency, Tyndall AFB, FL, Telephone Interview, 24 March 1997.
- Reimer, Dennis J. General, US Army Chief of Staff, Pentagon, Washington DC Address to Air Command and Staff College students. Air Command and Staff College, Maxwell AFB, AL, 9 September 1996.
- Ryburn, Maj James T. "Missions and Mobility Configurations for RED HORSE." Research Report no. AU-ACSC 88-2300. Maxwell AFB, Ala: Air Command and Staff College, May 1988.
- Shelton, Lt Col Kenneth. Commander, 1st Civil Engineer Squadron, Langley AFB, VA, Telephone Interview, 23 January 1997.
- Silver Flag Exercise Site Predeployment Information.* Detachment 1, 823 RED HORSE Squadron, Tyndall AFB, Florida, 3 October 1996.
- Smith, TSgt Boyd W. NCOIC, Bare Base Training, 49th Materiel Maintenance Group, Holloman AFB, NM, Telephone Interview, 13 March 1997.
- Smith, Capt Emmitt G. "An Examination of the Air Force Civil Engineering's Prime BEEF Home Station Training Program." Research Report no. AFIT-GEM-LSM-84S-18. Wright-Patterson AFB, Ohio: Air Force Institute of Technology, September 1984.
- Smith, Joe. Readiness Manager, Headquarters, Air Force Civil Engineer Support Agency, Tyndall AFB, FL, Telephone Interview, 30 September 1996, 6 February 1997 and 18 March 1997.
- Smith, Joe. Prime Base Engineer Emergency Force (BEEF) Implementation Guide,* Readiness Division, Contingency Support Directorate, Headquarters Air Force Civil Engineer Support Agency, Tyndall AFB, FL, January 1995.
- Smith, CMSgt John R. III. Site Chief, Silver Flag, Detachment 1, 823rd Red Horse, Tyndall AFB, FL, Telephone Interview, 12 February 1997.
- United States Department of Defense, *Responsibilities for Military Troop Construction Support of the Department of the Air Force Overseas*, DOD Directive 1315.6, Washington DC: Government printing Office, 1978.
- Waggoner, Capt L. Dean and Moe, 1st Lt M. Allen. "A History of Air Force Civil Engineering Wartime and Contingency Problems from 1941 to the Present." Research Report no. AFIT-GEM-LS-85S-23. Wright-Patterson AFB, Ohio: Air Force Institute of Technology, September 1985.
- Watkins, Maj Terry. Civil Engineer Readiness Staff Officer, Headquarters, Air Force, Pentagon, Washington DC, Telephone Interview, 20 February 1997.
- Webster's Ninth New Collegiate Dictionary.* Merriam-Webster Inc., Springfield, Massachusetts, 1985.

- Welsh, Todd. Deputy Chief, Readiness Directorate, Headquarters, Air Force Materiel Command, Wright-Patterson AFB, OH, Personnel Interview, 17 December 1996.
- Wiitala, MSgt Troy. Chief, Structures Shop, 14th Civil Engineer Squadron, Columbus AFB, MS, Telephone Interview, 21 January 1997.
- Wilbur, Maj Eric J. Civil Engineer Doctrine: The Principles of Air Force Combat Engineering, *The Civil Engineer*, Vol. 3, No 3, Winter 1995.
- Wilbur, Maj Eric J., Byers, Maj Timothy A., Cruz-Gonzalez, Maj Carlos R., Staib, Maj Robert J. and Wilson, Maj Joseph E. "Civil Engineer Doctrine: The Principles of Air Force Combat Engineering." Research Report no. AU-ACSC 95-207. Maxwell AFB, Ala.: Air Command and Staff College, May 1995.
- Williams, John. Readiness Manager, Headquarters, Air Combat Command, Langley AFB, VA, Telephone Interview, 30 September 1996.

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