

Breaching the Phalanx: Developing a More Engineer-Centric Modular BCT

A Monograph

by

MAJOR James M. Schultze

U.S. Army



School of Advanced Military Studies

United States Army Command and General Staff College

Fort Leavenworth, Kansas

AY 06-07

Approved for Public Release, Distribution is Unlimited

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 05-06-2007		2. REPORT TYPE AMSP Monograph		3. DATES COVERED (From - To) July 2006 - Feb 2007	
4. TITLE AND SUBTITLE Breaching the Phalanx: Developing a More Engineer-Centric Modular BCT				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) MAJOR James Schultze				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Advanced Military Studies Program 250 Gibbon Avenue Fort Leavenworth, KS 66027-2134				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Command and General Staff College 1 Reynolds Avenue Fort Leavenworth, KS 66027				10. SPONSOR/MONITOR'S ACRONYM(S) CGSC	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT See attached abstract.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UNLIMITED	18. NUMBER OF PAGES 55	19a. NAME OF RESPONSIBLE PERSON Kevin C.M. Benson, COL, US Army
a. REPORT UNCLASS	b. ABSTRACT UNCLASS	c. THIS PAGE UNCLASS			19b. TELEPHONE NUMBER (include area code) 913-758-3302

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major James M. Schultze

BREACHING THE PHALANX: Developing a More Engineer-Centric Modular
BCT:

Approved by:

Epstein, Robert, PhD

Monograph Director

Kevin C.M. Benson, COL, AR

Director,
School of Advanced
Military Studies

Robert F. Baumann, Ph.D.

Director,
Graduate Degree
Programs

Abstract

BREACHING THE PHALANX: DEVELOPING A MORE ENGINEER-CENTRIC MODULAR BCT by MAJOR James M. Schultze, U.S. Army, 48 pages.

The Department of the Army decided to re-structure the combat divisions into modular, brigade units in order to better address the difficulty inherent in fighting a long war on terrorism, while simultaneously providing combat units to OIF and OEF for SSTR operations. These new modular combat units are based on predominantly infantry and armor capabilities and have resulted in a large divestiture of engineering units and capabilities. However, the Army's reduction in its premier re-construction capability lies in stark contrast to the US Department of Defense (DoD) policy directive 30000.05 of November 2005, stipulating for all services to address SSTR as a decisive operation commensurate with the resourcing given other service-specific combat operations.

A better solution for the Army could be to invest in more engineer capability as the center-piece of its new modular BCTs. This seems more logical to produce flexible, capable forces rather than divesting the most relevant and flexible capability in the Army inventory: military engineering. This monograph will address the Army's challenge of implementing SSTR as a decisive operation as part of a main attempt to determine a method to "operationalize" a more engineer-centric concept. The BCT needs some capacity to produce longer term progress from the transient tactical victory of killing and capturing the enemy, while still maintaining its ability to conduct core missions of Offense, Defense, and SRO,.

As part of a search for viable capability design, the monograph will conduct a short survey of historical examples of the combat and construction capabilities of some venerable engineer formations. This survey will focus on engineers as the center-piece for current and future full-spectrum operations. 1940's and 1960's era engineer organization showed a clear ability to fight as well as build, enabling a robust capability for Full Spectrum success. What's more, in the manpower constrained environment of modern deployments, the historically multi-purpose engineer units helped commanders meet their plethora of infantry tasks and still maintained good capacity for combat engineering and construction.

Several solutions to the full-spectrum force structure problem are addressed in the monograph, with the Maneuver Enhancement (ME) "BCT" concept appearing most promising. The ME BCT has proven to be a viable option, having just returned from duty in Iraq, and has now fully implemented at Fort Lewis, WA. With continued study and development of doctrine and promising training programs, the ME BCT will meet its challenge of training and leader development. If the National Security Strategy is correct about the most common form of future warfare being full-spectrum combat, then the ME BCT has the potential to be the most useful BCT organization in the conflicts to come.¹

¹ U.S. Department of Defense. *The National Military Strategy of the United States of America*, U.S. Government Printing Officer, Washington: 2004, 4.

TABLE OF CONTENTS

INTRODUCTION	1
VIEWPOINTS ON FULL-SPECTRUM FORCE STRUCTURE.....	8
SECTION 1 – SHORT SURVEY OF ENGINEER UNITS IN FULL SPECTRUM OPERATIONS	14
SECTION 2 – AN ENGINEER-CENTRIC FORCE STRUCTURE FOR FULL SPECTRUM OPERATIONS	26
SECTION 3 – PROVING THE CONCEPT	33
SECTION 4 – CONCLUSION	40
SUMMARY OF FINDINGS AND RECOMMENDATION	41
APPENDIX 1	44
Figure 1. Deriving Joint Capabilities Elements for the Future Engineer Force.....	44
Figure 2. Future Engineer Force Capability Generation with Task Specific Force Pools..	45
Figure 3. The Organization and Mission Set Concept for the ME Brigade.....	46
Figure 4. Employment Concept for the Maneuver Enhancement Brigade	46
Figure 5. Force Structure Design for the Maneuver Enhancement Brigade.....	47
BIBLIOGRAPHY	48

INTRODUCTION

The object in war is not to kill everyone; is not butchery; is not genocide. We in the Army maintain that the object of war is the destruction of the enemy's will, not his physical destruction.²

Major General Robert H Scales, Jr.

The Department of the Army's stated reasons, in 2005, for deciding to re-structure the army were to a) make more modular, infantry-centric brigade units, b) in order to better address the operational tempo and unpredictable deployments. The change was also intended to address the difficulties inherent in fighting a long war on terrorism, while simultaneously meeting the Title X requirement to continually provide combat units to Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).³ These new modular units are based on predominantly infantry formations with reduced armor capabilities. A side effect that this paper seeks to remedy is modular designs subsequent divestiture of engineering units and capabilities from the modular BCT formations. The Army initially hoped to make 43 modular brigades based on a model of three maneuver (infantry or armor) battalions per BCT.⁴ These hopes could not be realized given General Schoomaker's decision to set a force cap of 355,000 soldiers for the Army's Operating Force (vice Generating Force).⁵ Therefore, the Army settled for 42 active duty brigades; each consisting of two maneuver battalions and one, less manpower intensive, cavalry squadron; as well as no engineer battalion in the BCT and no engineer brigade in the division (UEX) headquarters (unlike the legacy "Army of Excellence" BCTs and Divisions).

General Shinseki, then Army Chief of Staff, in his 1999 AUSA address, concluded that

² MG Robert H. Scales, Jr. *Future Warfare: Anthology*, Revised ed. (Carlisle: U.S. Army War College, 2000), 115.

³ MG David C. Ralston, Deputy G3 for Transformation, Army Staff, speech to AEI Panel on The Future of the U.S. Army, 11 April 2005 [online]; transcription available at <http://www.aei.org/events/filter.all,eventID.1011/transcript.asp>; Internet; accessed 18 November 2006.

⁴ COL(ret) Clinton Ancker, Director Combined Arms Doctrine Directorate, personal interview with author, Fort Leavenworth, 3 Nov 06.

⁵ Ibid.

the Army needed to become more rapidly deployable and strategically mobile.⁶ Schoomaker built on this requirement in 2003 deciding that, in addition to Shinseki's aims, he needed to add joint, expeditionary, and campaign quality force structure. Schoomaker reasoned that the Army had to reduce engineer units in exchange for more infantry and other "relevant" force structure.⁷ Schoomaker's decision to decrease engineer capabilities in the face of current and predicted future low-intensity conflict and pervasive Security Stability Transition and Reconstruction (SSTR) missions seems counter-intuitive.

This paper, of necessity, uses a few key Department of Defense (DoD) terms throughout which will be defined here: a) *stability operations* as – "an overarching term encompassing various military missions, tasks, and activities conducted outside the U.S. in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief." And b) *full spectrum superiority* as - "The cumulative effect of dominance in the air, land, maritime, and space domains and information environment that permits the conduct of joint operations without effective opposition or prohibitive interference."⁸ For the U.S. Army, "Full spectrum operations include offense, defense, stability, and support operations. Missions in any environment require Army forces prepared to conduct any combination of these operations."⁹; c) *Rapid Decisive Operations (RDO)* – a joint warfighting concept devised by US Joint Forces Command in a Concept White Paper in 2001; RDO is the official term denoting how the US military seeks to arrive at any contingency in 10 or less days with overwhelming

⁶ GEN Eric Shinseki, transcript of keynote speech to Association of the United States Army (AUSA) Symposium 1999, 12 October 1999 [online]; available from <http://www.ausa.org>; Internet; accessed 12 October 2006.

⁷ U.S. Army, *Army Campaign Plan*, slideshow brief [online]; <http://www.army.mil>; Internet; accessed 10 October 1999. slide 14.

⁸ U.S. DoD Dictionary of Joint Terms [online]; available from <http://www.dtic.mil/doctrine/jel/doddict>; Internet; accessed 8 November 2006.

capability to win a quick and decisive victory;¹⁰ d) *Security Stability Transition and Reconstruction Operations (SSTR)* – DoD concept for providing military support to an all-of-Government approach to nation-building and low-intensity conflicts; as stipulated in DoD Directive 3000.05, dated 28 November 2005;¹¹ e) *Combined Joint Task Force* – A U.S. term for a headquarters, at the operational level of war, made up of staff members from more than one service component and more than one nation’s military (e.g. CJTF-7 in Baghdad in 2003 was composed of US, UK, Australian and other nations’ military staff members representing army, air force, navy, and marine components) d) *Combined Arms Battalion (CAB)* – a new, U.S. Army, modular combat formation; it represents the lowest level of a combined arms staffed unit in the Army and consists of two tank companies, two mechanized infantry companies, an engineer company, a Headquarters and Headquarters Company, and a Forward Support Company. These terms are useful in framing a later argument on force structure requirements.

Army engineers and maneuver force commanders found that in Iraq (much as in each large-scale and small scale US conflict in modern history) ground, naval, and air forces all require large amounts of engineer work; from the tactical to the operational level. At the beginning of forced entry into the contingency area engineers help open and harden ports of entry, supply routes, and assembly areas. During the “high-intensity” portion of the conflict, engineers continue the previous tasks, and also help keep the invading force mobile and protected from the defender’s actions. Then, especially, during the stability and re-construction phase, engineers continue the previous tasks and are also needed to reduce the explosive hazards contamination,

⁹ U.S. Army *Field Manual 3-0: Operations*, (Washington D.C.: Government Printing Office, 14 June 2001), 1-48.

¹⁰ U.S. Joint Forces Command, “Glossary of Terms”, internet available from official website at <http://www.jfcom.mil/newslink/storyarchive/2001/pa020101.htm>. Accessed 20 October 2006.

¹¹ Gordon England, *DoD Directive Number 3000.05*, Subject: Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations, dated 28 November 2005, 2.

clear and maintain key supply routes, repair key infrastructure, establish remote military operating bases, provide engineering assessments on civilian quality of life, and enable targeted construction projects. The key characteristic of full-spectrum operations is that the engineer force has to conduct each of the “phase-specific” tasks continuously throughout the Iraq area of operations. As a result of this overlap, engineer force structure for “low-intensity”, counter-insurgency operations has to look surprisingly similar to “high-intensity” operations due to simultaneity of executing these varied tasks. However, the Army’s reduction in its premier, responsive military construction and re-construction capability lies in stark contrast to the US Department of Defense (DoD) policy directive of November 2005, stipulating that Stability, Security, Transition, and Reconstruction Operations (SSTR) “...shall be given priority comparable to combat operations and be explicitly addressed and integrated across all DoD activities including doctrine, organizations, training, education, exercises, materiel, leadership, personnel, facilities, and planning.”¹²

The problem for the Army started when a political push for a “peace dividend”, combined with the Joint Quadrennial Defense Reviews, and fiscal constraints from 1997 through 2001; all dictated an embrace of an RDO, minimalist, force structure aimed at a, yet to be named, near peer competitor rather than the prolific number of low-intensity adversaries already extant.¹³ From 1997 to 2001, the Army began to respond to the Department of Defense (DoD) embrace of “information dominance” and “rapid decisive operations” by incorporating the RDO doctrine into professional Army discourse. DoD had confidence in these concepts’ powerful impact on future

¹² England, “SUBJECT: Military Support...”, 1.

¹³ BG (retired) Huba Wass de Czege, “Relevant Wisdom”, *Army Magazine*, Vol. 56 No. 6, 2006, 8.

conflicts as illustrated during Operations Desert Storm and Enduring Freedom.¹⁴ The DoD Quadrennial Defense Review (QDR) of 2001 was largely based on the idea of information dominance, precision targeting, and effects-based operations. Retired Brigadier General Huba Wass de Czege found that: “We removed echelons, greatly increased spans of command and reduced manning in the belief that technology in its various forms of robotics, automation, information and more would greatly increase productivity.”¹⁵ The initial results of the CENTCOM plan for Operation Enduring Freedom in Afghanistan in late 2001 seemed to validate these RDO and information dominance claims. It was at this time that MG Anders B. Aadland, then the Engineer School Commandant, wrote a white paper for the Army’s Engineer School in April 2002 trumpeting the promises of “information dominance”. Aadland made one of the paper’s strongest claims with the statement: “...we will not only know where all of our units are located, we will have a complete picture of where all of the Republican Guard [enemy] units are located as well.”¹⁶ Information then, from the Engineer School Commandant’s perspective, appeared to take on more relative importance than actual engineers for enabling Army maneuver.

Contravening this joint theory of Information Dominance and Rapid Decisive Operations (RDO) was the rise of another warfare method, “The real revolution in military affairs”, namely protracted guerilla warfare/insurgency and its implications for requiring a large, manpower-heavy

¹⁴ Colonel Brian G. Watson, “Reshaping The Expeditionary Army To Win Decisively: The Case For Greater Stabilization Capacity In The Modular Force”, Strategic Studies Institute, Carlyle: August 2005; Internet available from http://www.army.mil/professionalwriting/volumes/volume3/December_2005/12_05_2.html. Accessed 20 November 2006.

¹⁵ Huba Wass de Czege, “Using Information Technologies to Reduce the Army’s Echelons”, *Army Magazine*, April 2002. Internet available from <http://www.ausa.org/webpub/DeptArmyMagazine.nsf/byid/CCRN-6CCS3E>. Accessed 9 November 2006.

¹⁶ “Situational awareness and understanding of the entire battlefield is an integral part of its survivability and lethality.” He also states that; “With this information, we stop reacting to obstacles as we encounter them and start making decisions based on the ability, capability, and intent of the enemy to emplace an obstacle.” MG Anders B. Aadland, “Engineer White Paper: Into the Objective Force”, *Engineer: The Professional Bulletin for Army Engineers*, Fort Leonard Wood, April 2002, 5.

army to counter it.¹⁷ In this article, William Hawkins contended that current and future wars would be more protracted and larger in scope due to his presumption that small nations or intrastate actors could, with the appropriate leadership, possess a capability and capacity to enable long-term, drawn out military operations. With this assertion comes an understanding that even when setting out on a “small-war” a Nation would find itself in a larger scale and larger scoped conflict than previously imagined. Hawkins illustrated his points by citing the U.S. experience in Vietnam and Iraq as well as the Israeli’s recent experience in Lebanon in Summer 2006.

Several studies have concluded that there is a requirement for a large ratio of troops to population when conducting these low-intensity conflicts. The RAND Corporation, during the Vietnam conflict, completed a historical look at manpower ratios in counter-insurgencies. BG John S. Brown wrote an analysis for *Army Magazine* in April 2006 analyzing manpower requirements during COIN and stability operations. Thirdly, the Combat Studies Institute at Fort Leavenworth developed a set of planning factors for determining troop strength required for “Contingency Operations” in 2006.¹⁸ These studies go against the minimalist objective of Rapid Decisive Operations where ground forces are introduced, if at all, only to cause the enemy to become more targetable for other stand-off weapons systems. Moreover, as noted by counterinsurgency author Anthony J. Joes,¹⁹ these types of insurgency or low-intensity conflict conditions are becoming more frequent and more persistent. The Army is facing and will continue to encounter low-intensity conflict scenarios, separate from or during and after RDO type conflicts, and will now have to face them with a force tailored for RDO only.

Keeping Aadland’s Engineer School white paper in mind, it is easy to see why, in

¹⁷ William R. Hawkins, “Protracted War: The Real Revolution in Military Affairs”, *Army Magazine*, Vol.56, No. 11, 2006, 10.

¹⁸ John J. McGrath, *Boots on the Ground: Troop Density in Contingency Operations*, Global War on Terrorism Occasional Paper 16, (Fort Leavenworth: Combat Studies Institute, 2006), 136.

implementing the modularity decision, Schoomaker decided it was sensible to cut 11 Engineer Battalions from the force structure as part of this modularity.²⁰ However, since OIF entered its second year and exhibited signs of a persistent insurgency along with extreme difficulties in stabilizing and reconstructing Iraq, the Army has documented an increase (rather than a decrease, as was previously indicated by the “information dominance” white papers and Army After Next analyses) in the demand for engineer units. This logic trail raises the questions: Was cutting Engineer force structure from Army Division and below formations the right answer for enabling Army Operations: Offense, Defense, and Stability Operations and the Army’s Clear, Control, Retain strategy? Is a modular, but Infantry-centric force, logically more able to conduct full-spectrum operations?

In January 2005 the Army Chief of Staff created an in-house Task Force Stability and Reconstruction Operations (SRO) to study viable options for an Army Stability and Reconstruction Operations force structure or capability. The Army wrestled with designing force structure courses of action that could meet the requirements of current SRO operations while still meeting the perceived requirement to maintain the Army’s ability to fight a war with a near peer competitor. The TF SRO work was highlighted in November 2005, when the Department of Defense (DoD) issued Directive 3000.05 *Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations*. This memo made it DoD policy to regard and resource SSTR operations as equal to high intensity (near peer) combat operations. However, as the Army had already decided to transform, and, in fact, had almost completed transforming the new DoD policy created a dilemma. This dilemma was forecast by Schoomaker when he created his Army TF SRO back in February 2005. His guidance to the TF was to “...Either create standing units

¹⁹ Anthony J. Jones, *Resisting Rebellion: The History and Politics of Counterinsurgency* (Lexington: The University Press of Kentucky, 2004), 4-5.

²⁰ Ancker, personal interview...

focused on stability operations or develop the capability to rapidly assemble, modular force elements that achieve the same effect as standing units.”²¹ The Army has, evidently, decided to develop the modular units.

VIEWPOINTS ON FULL-SPECTRUM FORCE STRUCTURE

The Institute for Defense Analysis (IDA) reported that the Army’s Modular Force transformation has divested too many maneuver battalions to be effective at manpower-intensive conflicts such as COIN.²² Colonel Brian Watson argued that the Army Modular Force is deficient in Full-Spectrum capability because it lacks the capability to conduct Stability and Reconstruction operations simultaneously with high-intensity combat operations.²³ Sarah Sewall wrote that the modular force is inadequate not due to force structure, rather, due to an institutional risk aversion and myopic focus on technological solutions.²⁴

Major General Ralston, G3 Force Structures, U.S. Army Staff, told an American Enterprise Institute conference audience about the need for more “relevant” force structure like infantry, and yet still made a plea, at the end of his speech, for audience support in effecting ways for a force-capped Army to make its force structure more flexible.²⁵ The 2004 Army Campaign

²¹ GEN Peter Schoomaker, as quoted in U.S. Army Standing Task Force briefing slides, 8 February 2005, slide 6.

²² IDA report as quoted by Richard Hart Sinnreich, *Army Magazine*, 2005 [online]; available <http://www.ausa.org>; Internet; accessed 12 November 2006.

²³ Brian G. Watson, “Watson, Colonel Brian G. “Reshaping The Expeditionary Army To Win Decisively: The Case For Greater Stabilization Capacity In The Modular Force”, Strategic Studies Institute, Carlyle: August 2005 [online] available from http://www.army.mil/professionalwriting/volumes/volume3/december_2005/12_05_2.html; Internet; accessed 9 November 2006.

²⁴ Sarah Sewall, Director of the Carr Center for Human Rights Policy at Harvard, “Modernizing U.S. Counterinsurgency Practice: Rethinking Risk and Developing a National Security Strategy”, *Military Review*, Volume LXXXVI, September-October 2006, No 5, 105.

²⁵ “Once you have a fixed end strength and you have a full spectrum of operations, it would demand more than what you might have on hand. You have to make the force as flexible and as responsive as possible, and we appreciate your support and help as a nation in doing that.” MG Ralston, AEI Conference, speaker transcript. Schoomaker, Peter GEN, et al. transcription of American Enterprise Institute Panel meeting, Washington: 11 April 2005 [online] available from <http://www.aei.org/events>

Plan prescribed the divestiture of engineer forces, as “cold war force structure”, and called for an increase infantry, civil affairs, and military police in order to make a more “flexible force”.²⁶ The Army’s argument seems misguided when one considers that Army force-capped or manpower constrained units since the Battle of the Bulge, Vietnam, Bosnia, Kosovo and OIF relied on the flexibility of their engineer units. The engineers made up the maneuver force losses from combat action or force-capping policy decisions, exhibiting the quintessential flexibility of engineer units and personnel.²⁷ Nonetheless, this Army policy of taking manpower transfers out of the engineer function in late 2003 through 2004 resulted in the Army engineers losing over 20,000 of their active, reserve, and national guard personnel over that two year period.²⁸

At the opposite view, there are a number of experts who believe the current Army modular BCTs are the best way to meet full spectrum operations, especially SSTR. USMC Colonel Michael Melillo wrote that the Army modular formation is the correct way to create a force structure to successfully fight “small wars”. His monograph appeared in the Autumn 2006 *Parameters* where he supported the “small wars” capability of the new modular Army because he felt it created more brigade sized units that are also more deployable, combat capable, and more lethal than the former division and corps based, “large war” force structure.²⁹ US Army LTC Ollivant tended to agree with both Ralston and Melillo when he, along with 1LT Chewning, wrote the winning essay for the Combined Arms Command essay contest in 2006. Ollivant and

[/filter.all,eventID.1011/transcript.asp](#); Internet; accessed 11 November 2006.

²⁶ U.S. Army, *Army Campaign Plan*, slides 13, 14 [online] available from <http://www.army.mil>; Internet; accessed 12 December 2006.

²⁷ Hechler, Ken. *Holding the Line: The 51st Engineer Combat Battalion and the Battle of the Bulge December 1944 – January 1945*, (Washington: U.S. Army Corps of Engineers, 1988), 17-19.

LTC Chris Hickey, former commander of 2nd Squadron/3rd Cavalry Regiment in Iraq, personal interview with author, Fort Leavenworth. 25 September 2006,

MAJ Dan Hibner, former commander of A Company/11th Engineer Battalion in Iraq, personal interview with author at Fort Leavenworth 6 November 2006.

²⁸ MG Randall Castro, briefing slides for ENFORCE Conference 2006, 2 May 2006, slide 39.

²⁹ Michael Mellilo, “Outfitting a Big War Military with Small War Capabilities”, *Parameters*, Vol 36, No. 3, 2006, 30.

Chewning stipulated that the Combined Arms Battalion (CAB) is the best force structure for full-spectrum operations and only needs a few “plugs” from supporting staff and units such as civil affairs (CA), Human Intelligence Teams (HUMINT), and psychological operations (PSYOPS) to be effective in an SSTR operation or in a COIN environment.³⁰ David Galula also believed in infantry as the optimum force to conduct the complex task of COIN.³¹ Finally, the most strident believer in kinetic and lethal force, seems to be Ralph Peters. Peter’s consistent theme has been that the U.S. military has not used enough lethal force in conducting COIN warfare in Iraq.³²

However, at the middle viewpoint are some readings that do not side with an infantry or tank heavy force structure, and seem more quantitative or non-lethal effects based. John J. McGrath wrote his Occasional Paper 16, for the Global War On Terrorism paper series, about ground troop ratios per civilian population for contingency operations. He studied ground force operations in the Phillippines, Germany, Austria, Japan, Malaya, the Balkans, as well as large municipal police organizations in Los Angeles and New York. McGrath then took his conclusions from each case study and developed a table of “Troop Density Planning Factors” for planners to use when developing a force size for contingency operations. Finally, he vetted the force table by analyzing the OIF rotations from 2003-2005 against his planning factor data. He found that the OIF force size was two “brigade equivalents” smaller than what his planning factors recommend.

Brigadier General Gregg Martin wrote his OIF lessons learned paper upon serving for over 9 months in OIF as the 130th Engineer Brigade Commander and Combined Joint Task Force-

³⁰ LTC Colonel Douglas Ollivant A. and 1LT Eric D. Chewning, “Producing Victory: Rethinking Conventional Forces in Counterinsurgency Operations”, *Military Review*, July-August 2006. 57-58.

³¹ “For his ground forces, he needs infantry, and more infantry...”, David Galula, *Counterinsurgency Warfare: Theory and Practice*, (New York: Frederick A. Praeger, 1964), 93.

³² Ralph Peters, speech transcript from American Enterprise Institute Symposium, 2005 [online] available from <http://www.aei.org/events/filter.all,eventID.1011/transcript.asp>; Internet; accessed 22 November 2006.

7 (the pre-cursor to Multi-national Corps-Iraq or MNC-I) Engineer. His remarks encompass his time as the V Corps Engineer and 130th Engineer Brigade Commander during initial invasion operations and as Brigade Commander and CJTF-7 Engineer during SSTR operations. Martin wrote that, although the invasion and phase III operations were overall successful, the engineer operations (especially for phase IV) were plagued by a lack of engineer manpower, command and control, and expertise.³³ He described how his single Engineer Brigade, in overall control of engineer operations for the CJTF (through 2003) had to man three CJTF C2 nodes while simultaneously supporting V Corps Major Subordinate Command's as the Army Component Command engineer and providing, attached, engineer expertise to the fledgling Office of Reconstruction and Humanitarian Assistance (ORHA). He stated that "All engineer headquarters – brigade, group, and battalion-are huge force multipliers....The O-6 division engineer brigade headquarters [in legacy heavy divisions] has been a huge force multiplier in all phases of the campaign. We need to retain this in the heavy division."³⁴ Despite this warfighting engineer commander's assessment and recommendation, Schoomaker decided to completely cut engineer brigade and battalions from both maneuver divisions and brigades.

The significance of cutting engineer brigade and battalion level command and control from the Army's premier "full-spectrum" formation is found when considering the likelihood of low-intensity conflict, "re-construction" type operations versus the "full-spectrum", modular BCT having a significantly reduced ability to allocate engineer senior leadership, units, and expertise for re-construction intensive operations throughout the formation. The 2006 Army Posture Statement acknowledges the high likelihood of future SSTR operations and COIN

³³ Colonel Gregg F. Martin, U.S. Army, "130th Engineer Brigade Lessons Learned and Recommendations From Operation Iraqi Freedom", *Engineer: The Professional Bulletin of Army Engineers*, Volume 33, October-December 2003, 11-13.

³⁴ Martin, "130th Engineer Brigade...", 11.

environments.³⁵ This view is shared by U.S. Ambassador Carlos Pascual, Coordinator of the State Department's Office of Reconstruction and Stabilization who stated that: "...50 percent of countries that have been through conflict have lapsed back into conflict after five years..."³⁶ And, deducing from past wars, even high-intensity conflicts will present Phase IV SSTR operations necessitating a SSTR capable force structure. The Army is almost certain that it will face numerous and persistent low-intensity conflicts in the near and long-term, yet still divested itself of its most capable, responsive, and most used asset for enabling SSTR operations; military engineering.

Taking these considerations into account, one looks at the above recommendations of experts as to the most effective way to win an SSTR operation in a COIN or low-intensity environment (the environment faced before, during and after high-intensity combat): is it "hearts and minds" versus "kill and capture"? The Special IG for Iraq provides ample evidence that reconstructing (hearts and minds) without security produces prodigious waste and failure.³⁷ However, Ambassador Pascual, MG Chiarelli, COL Kendall Cox, LTG Thomas Metz, and GEN James L. Jones (NATO Cdr) all concluded that reconstruction operations, rather than kinetic lethal operations, are the decisive element in achieving political objectives in war.³⁸ The Army's

³⁵ U.S. Army, *2006 Army Posture Statement*, slide i, briefing slides [online] available from http://www.army.mil/aps/06/02_purpose; Internet; accessed 10 November 2006.

³⁶ U.S. Ambassador Carlos Pascual, as quoted by John E. Prior, Ed. *Dwight D. Eisenhower National Security Conference 200: Final Report*, (Carlyle: Strategic Studies Institute, September 2005), 51.

³⁷ Stewart Bowen, U.S. Special Inspector General for Iraq; Interview with Gwen Iffil, "Much Undone In Rebuilding Iraq", *PBS News Hour*, transcription of interview [online]; available from www.pbs.org/newshour/bb/middle_east/jan-june06/reconstruction_1-30.html; Internet; accessed 11 November 2006.

³⁸ Ambassador Carlos Pascual, speech transcript from 2005 Dwight D. Eisenhower National Security Conference, Washington, September 2005, 49-50.

Major General Peter W. Chiarelli and Michaelis, Major Patrick R. "Winning the Peace: The Requirement for Full-Spectrum Operations", *Military Review*, Fort Leavenworth: July-August 2005 [online] available from http://www.army.mil/professionalwriting/volumes/volume3/october_2005/10_05_2.html; Internet; accessed 20 November 2006.

problem now is that it has a force structure optimized for rapid decisive operations within a sphere of U.S. “information dominance”, however, is currently faced with a manpower intensive, complex, informationally uncertain Joint Operating Environment.

If one espouses the logic of the above views on the non-decisive nature of kinetic operations and more decisive re-construction operations, then consider a combat engineer unit that can synchronize and synthesize BUILDING and FIGHTING simultaneously, under one engineer commander. A commander who can provide a complete vision encompassing both building and fighting to have security where the unit is re-constructing and have construction where the unit is securing: truly enabling an integrated strategy of Clear, Control, Retain.

Would a better solution for the Army be to invest in engineer structure as the center-piece of its core, full-spectrum operations rather than the divestiture of the most relevant and flexible capability in its inventory? This paper will address the Army’s problem of implementing the DoD Directive 30000.05, structuring for SSTR as a decisive operation, while maintaining its ability to conduct Offense and Defense, in an attempt to determine a method to “operationalize” a more engineer-centric concept. The next section will look at the full-spectrum use of engineers in World War II, Vietnam, post-conflict DESERT STORM, and OIF to ascertain any relevant capabilities and capacities for future modular units.

Linda Robinson, “Interview with Lt. Gen. Thomas Metz”, *US News and World Report* [online] available from <http://www.usnews.com/usnews/news/articles/050204/4metz.htm>; Internet; accessed 27 November 2006.

Gen. James L. Jones (USMC), as quoted by Behn, Sharon. “Reconstruction Seen As Key To U.S. Exit”, *The Washington Times*, 5 October 2006. 13.

SECTION 1 – SHORT SURVEY OF ENGINEER UNITS IN FULL SPECTRUM OPERATIONS

“One of the great truths of this (OIF) campaign is that combat operations alone will not attain the desired end-state.”³⁹

On Point Study Group, May 2003

“I believe that such a transition to peacetime support will set the tone for regional stability into the next century...Our government's actions will be judged in the years ahead more on how we promoted the conditions for lasting peace than how we waged the war.”⁴⁰

LTG Henry J. Hatch, Chief of Engineers, U.S. Army, on pre-war planning for peacetime transition from DESERT STORM, December 1990

The 249th Engineer Combat Battalion in WWII was one of several engineer battalions receiving infantry missions during the Battle of the Bulge from 18-22 December 1944. Ten days prior to the actual battle, the battalion was constructing wooden tressel bridges, lines-of-communication (LOC) roads, and river crossing sites. On 24 December 1944, then Major John K. Addison received orders from the 26th Infantry Division to relieve 4th Armored Division units holding two towns along the edge of the German breakout. While approaching the two towns, the 249th found that the towns were now occupied by German units with no sign of the US 4th Armored Division. The 249th conducted an attack against the Germans in the two towns and captured them after two days of hard fighting.⁴¹

The 1111th Engineer Combat Group and its subordinate units, the 291st and 51st Engineer Combat Battalions, were constructing a landing strip for liaison planes near First Army HQs and running a sawmill near Trois Points and Stavelot when they were ordered to occupy and defend

³⁹ Gregory Fontenot, E.J. Degen, David Tohn, *On Point: The United States Army in Iraq*, U.S. Army Study Group Report, May 2003 [online] available from <http://call.army.mil/products/on-point/toc.asp>; Internet; accessed 27 November 2006.

⁴⁰ LTG Henry J. Hatch, as quoted by Janet A. McDonnell, *After Desert Storm: The U.S. Army and the Reconstruction of Kuwait* (Washington D.C.: U.S. Government Printing Office, 1999), 39.

Stavelot, Trois Points, and Malmedy against Obersturmbannfuehrer Jaochim Peiper's *Kampfgruppe Peiper* (of the *I SS Panzer Corps*).⁴² The 1111th Engineer commander visualized a defensive scheme for the three towns, directed his engineers, and held up Peiper for five days until relieved by elements of the 82d Airborne and 3d Armored divisions.

The 44th Engineer Combat Battalion was working in the VIII (US) Corps rear area with the 1107th Engineer Combat Group running sawmills, repairing roads, and operating a quarry until 17 December 1944. At mid-day on the 17th, the 44th was given to the 29th Infantry Division who gave it the mission to defend the town of Wiltz to delay the advance of the *Panzer Lehr Division's* lead elements. The 44th was augmented by six damaged tanks, elements of a tank destroyer detachment, a 105-mm artillery detachment, and some hastily assembled headquarters troops from division to serve as infantrymen. Making initial contact with the *Panzer Lehr* at noon on the 18th, the 44th ECB (+) was able to delay for almost 36 hours, giving VIII (US) Corps time to bolster its defenses. Within six month's time, these same engineers were building refugee camps, conducting area damage assessment and control, and re-building the necessary infrastructure to enable Allied Occupation operations.⁴³

How did these Engineers have the ability to perform such full-spectrum operations without the benefit of recent army technology and the "pentathlete" concept now embraced by the Army leadership? The answer: The Army Engineer leaders understand the enabling effects of critical terrain and critical infrastructure. Then, as leaders, they also understands the unit's wartime tasks, pre-deployment training scenarios, and acquired skillsets from pre-deployment

⁴¹ John K. Addison. "The Making of a WWII Battalion Commander", *Army*, Volume 56 No. 3, March 2006, 69-70.

⁴² Alfred Beck, Abe Bortz, Charles Lynch, Lida Mayo, and Ralph F. Weld, *The United States Army in World War II, The Technical Services, The Corps of Engineers: The War Against Germany*, (Washington: GPO, U.S. Army Center of Military History), 1985, 471-483.

⁴³ William C. Baldwin, "Army Engineers In Post-War Reconstruction: The Philippines, Japan, And Germany, 1945-1947" (Office of History, Headquarters, U.S. Army Corps of Engineers, 1988), 7.

events and, then, they can also draw on actual wartime task experiences.

A look at the initial forming and unit-level training of the 51st Engineer Battalion provides some detailed insight. In his memoirs, the unit commander listed tasks that he expected his unit to perform in battle. These included constructing prefabricated and non-standard fixed bridging, float bridging; conducting platoon through battalion level attacks against a fortified area, perform urban combat tactics, minelaying, and countermine tactics.⁴⁴ Then he described the multiple iterations of performing these tasks under much varied conditions such as: during nighttime hours and in extreme weather.⁴⁵ Finally, their capstone event was the division level training exercise at the XIIIth Corps maneuver area in West Virginia in September 1943. Like many Army units beginning activation in 1941 and 1942, the 51st Engineer Battalion experienced significant manpower shortages and suffered through poor quality officer leaders.⁴⁶ This unit, organized and trained under the Army Ground Forces and engineer hating Leslie McNair, enjoyed no special privileges of hand-picked enlisted men or officers. The 51st, luckier than most, however, was able to offload a number of its lower quality officers just prior to deploying to Europe.⁴⁷ Upon deployment to France following the D-Day landings, the 51st was gainfully employed repairing and re-constructing roadway infrastructure destroyed by the retreating German units. It was this activity that realistically demonstrated to the engineers how critically enabling certain terrain and infrastructure can be in deciding the outcome of any particular maneuver or operation. There is, conspicuously, no mention of conducting a live fire defense of complex terrain either during the unit's training or combat missions prior to 18 December 1944.

⁴⁴ Ken Hechler and Barry Fowler, *Holding the Line: The 51st Engineer Combat Battalion and the Battle of the Bulge*, (Fort Belvoir: U.S. Army Corps of Engineers Office of History, 1988), 3.

⁴⁵ Hechler and Fowler, *Holding the Line...*, 4.

⁴⁶ Blanch D. Call, Jean E. Keith, and Herbert H Rosenthal, *The United States Army in World War II: The Technical Services, The Corps of Engineers: Troops and Equipment*, (Washington: Office of the Chief of Military History, Government Printing Office, 1958), 147.

⁴⁷ John K. Addison, "The Making of a WWII Battalion Commander", *Army Magazine*, AUSA, Army, Volume 56 No. 3, March 2006, 65.

One can safely conclude that the engineers' experiences in constructing lines-of-communication for the various division, corps, and army level offensive operations in pursuing the Germans, imbued in them an appreciation and understanding for the enabling nature of critical terrain and infrastructure. For example, the 249th ECB constructed one of General Patton's key LOC bridges and lived through the enormous pressure applied on them when the whole 3d Army was awaiting bridge completion to enable its further advance.⁴⁸ Engineer units in the European Theater in World War II showed the flexibility of engineer units in building and fighting.

General MacArthur showed the powerful vision of an engineer as commander. After being given the sweeping authority as the Supreme Allied Commander in Post-War Japan/Far-East Asia, MacArthur was able to visualize, describe, and direct the complete reconstruction and revitalization of Japan following World War II. MacArthur's acumen and judgment enabled the Japanese to rise to become a viable nation within a few short years.⁴⁹ He oversaw a tremendous achievement of revitalizing a nation from the almost complete destruction of a naval blockade and prolonged aerial bombardment of incendiary raids for 13 months and two atomic bombings.

Perhaps no other modern conflict so highlighted the vital importance and flexibility of engineer units and commanders in a counter-insurgency, Full-Spectrum environment, as the Vietnam War. Army engineers in Vietnam proved pivotal in providing U.S. combat forces the ability to maneuver, sustain, and develop the capacity of the South Vietnamese military and government. The principal engineer unit structure was the engineer combat battalion and the engineer construction battalion. Both withstood the crucible test of direct action combat with the Viet Cong and with main force NVA units, and were still able to meet their enormous construction and combat support requirements. The U.S. Army in Vietnam had no true "Corps"

⁴⁸ Addison, "The Making of a WWII Battalion Commander" ..., 65.

engineers for the I, II, III, and IV Field Forces. Each combat division had an attached divisional engineer battalion, only, with no engineers in the maneuver battalions or regiments.⁵⁰ Unlike Army engineers in World War II, the echelon above division (EAD) engineer units were organized directly under the Engineer Command, Vietnam, rather than the corps-level “Field Force” headquarters.⁵¹ These engineers were tasked with not only LOC, port, airfield, and base camp construction, but also to provide combat engineer capability to the divisional and field force units for direct combat actions and civic assistance projects.⁵² For example, the 168th Engineer Battalion (Construction) was one of the first U.S. combat units in Di An near Cu Chi. The 168th, as part of the advance party construction force, built base camps and bed-down facilities for the 1st (US) Infantry Division.⁵³ In addition to construction tasks, it conducted its own perimeter security and patrols that withstood several insurgent attacks throughout fall 1966.⁵⁴ The 8th Engineer Battalion (Combat), attached as the 1st Cavalry Division’s engineer unit, along with the 70th Engineer Battalion from echelon above division, constructed and maintained the 1st Cavalry Division’s helicopter airfield and hangars at An Khe.⁵⁵ It also fought alongside the airmobile infantrymen during combat operations. The 65th Engineer Battalion, attached to the 25th Infantry Division, with elements of the 158th Engineer Battalion, from echelon above division, provided the vanguard formation of jungle clearing bulldozers that the maneuver units would follow behind during OPERATION CEDAR FALLS in 1967.⁵⁶ The jungle clearing engineer bulldozer operators experienced a 66% casualty rate from their exposed tactical position at the front of

⁴⁹ Mayo, Marlene J., Robert ed., Chapter 1, “American Wartime Planning for Occupied Japan”, published in: *Americans as Proconsuls: United States Military Government in Germany and Japan, 1944-1952*, (Carbondale and Edwardsville, Southern: Southern Illinois University Press, 1984), 49-51.

⁵⁰ Robert R. Ploger, *Vietnam Studies: U.S. Army Engineers 1965-1970* (Washington: U.S. Army Office of Military History, 1974), 81-83.

⁵¹ Ploger, *Vietnam Studies...*, 140-141.

⁵² Ploger, *Vietnam Studies...*, 140-142.

⁵³ Ploger, *Vietnam Studies*, ... 134, 139-140.

⁵⁴ Ploger, *Vietnam Studies...* 81.

⁵⁵ Ploger, *Vietnam Studies...* 77-78.

combat operations.⁵⁷ However, the tactics of close engineer support to combat formations was continually successful in helping the infantry divisions clear Viet Cong from their areas of operation, while the theater-level engineering tasks allowed indigenous economic and agriculture expansion for the South Vietnamese.⁵⁸ The long lasting, positive impact these engineer units provided to the combat operations and government capacity of South Vietnam were critically important to the overall war effort. Engineer units constructed four massive port and logistic bases at Saigon, Cam Ranh Bay, Da Nang and Qui Nhon that are still in use today by the Vietnamese. Army engineers also constructed over 3,000 kilometers of paved roadway, new government buildings at national through local level, hospitals, schools, and agriculture improvements. The engineer battalions accomplished all this while still responsible for combat engineering support to the infantry divisions. With General Abram's concentration on building host-nation governance and capacity, and his engineers ability to build and fight, the insurgency in South Vietnam was reduced considerably, some would argue beaten, by 1972.⁵⁹ The construction projects built by the Army's engineers in Vietnam can still be witnessed today in the economic vitality of southern Vietnam versus the northern area of its former rival.

Army engineers in DESERT SHIELD, in 1990, were ubiquitous across the battlefield. From as far rearward as building the ship unloading causeways, LOC roads, supply dumps, and major command posts, to as far forward as the unit tactical assembly areas, defensive positions, and rehearsal obstacles along the forward line of troops. Upon transitioning to DESERT STORM the Army engineers were the most forward conventional units. They had to dismount into the enemy's wire and mine obstacles to breach the way for follow-on forces. Upon completion of

⁵⁶ Ploger, *Vietnam Studies*...138.

⁵⁷ Ploger, *Vietnam Studies*... 103.

⁵⁸ Ploger, *Vietnam Studies*, 158-159.

⁵⁹ Mackubin T. Owens, PhD, "The Vietnam War: Winnable After All", Ashbrook Center For Public Affairs at Ashland University, December 1999 [online] available from <http://www.ashbrook>

ground combat operations, the engineers remained in theater to destroy captured enemy ammunition dumps, conduct area damage assessment and the re-construction of Kuwait while their maneuver brethren conducted a quick re-deployment back to the U.S. The 3rd Army, at the time, maintained a robust force structure of engineers that enabled a near seamless transition from preparation for combat through combat operations, and, finally, to conflict termination and support operations. Iraqi forces had severely damaged the Kuwait electrical, water, sewage, roadway, airport, and telephone services during their seven-month occupation.⁶⁰ The Department of Defense, on 7 March 1991, after Iraq and Kuwait had agreed to the UN resolutions, assigned a single U.S. commander to lead the US support and reconstruction effort in Kuwait, and be the personal representative of the SECDEF in Kuwait. They chose an engineer major general, Patrick Kelly, and gave him full authority to “...coordinate reconstruction assistance planning...execute reconstruction activities, and coordinate with the U.S. ambassador and other federal agencies” and “...assume control of the Defense Department’s assistance to the Kuwaiti Government.”⁶¹ Kelly’s vision was to quickly restore basic life sustaining services to the Kuwaitis and then transition to maintenance and handover of facilities to Kuwaiti engineers. By their quick actions and on-the-job training of Kuwaiti engineers, Kelly’s units were able to restore phone services and electricity by late March, emergency government building repairs by mid-May, road and air traffic by early May, and water and sewage services by June 1991.⁶²

This paper’s final survey is of Army engineer units in OIF. Just before DESERT SHIELD in 1990, the Army reviewed the divisional engineer battalion structure and utility for mechanized warfare. Based on this review and on pressures to downsize the peacetime forces,

[.org/publicat/oped/owens/99/vietnamwar.html](http://www.dodpublicat/oped/owens/99/vietnamwar.html); Internet; accessed 8 November 2006.

⁶⁰ McDonnell, *After Desert Storm...*, 103-104.

⁶¹ McDonnell, *After Desert Storm...*, 138-143.

⁶² McDonnell, *After Desert Storm...*, 136, 138-143.

the Army decided to enact an Engineer Restructure Initiative (ERI).⁶³ This program called for the downsizing of the engineer combat battalions from over 800 personnel on the MTOE to less than 400.⁶⁴ For combat engineer battalions, the divisional engineer battalion would lose its horizontal construction capability, LOC bridging capability, and only retain its sapper platoons, armored earthmoving tractors, and assault tank bridges (armored vehicle launched bridge - AVLB). The intent was to take the large, single division engineer battalion and split it up to make three, smaller, mobility and survivability focused combat engineer battalions. ERI then created a divisional engineer brigade headquarters to command and control these three battalions optimized for mobility. The resulting engineer battalions were so capability constrained, however, that they experienced severe difficulties supporting the only actual “real-world” deployments the Army would face over the next 15 years - stability and reconstruction operations.⁶⁵ Looking at OIF, the divisional engineer battalions were optimized for rapid decisive operations: to conduct explosive and dismounted, assault breaching to keep the maneuver force’s mobility. The initial deployment of the bulk of 3d Infantry Division, much like each contingency deployment before it over the last 10 years, presented only austere living conditions from February to late March. When the 3d I.D. was displaced out of the pre-constructed Kuwaiti encampments to make room for the 101st Airborne Division, the 3d I.D. divisional combat engineers could provide little in the way of infrastructure and force bed-down for their supported troop units. The “dog-face” soldiers lived in the squalor of tents on the sandy ground and pit latrines. These conditions were a harbinger for things to come when Baghdad fell and the Iraqi cities, along with the Soldiers, would need immediate construction support. The Generated Start plan, for the Army, called for a small

⁶³ Larry Roberts, PhD, “The Evolution of the Engineer Force: Part II”, *Engineer: The Professional Bulletin of Army Engineers*, July 2002, 45-46.

⁶⁴ James H. Raymer, “The Corps Engineer Battalion in Contingency Operations”, Thesis for MMAS, Fort Leavenworth, 2001, 17-18.

⁶⁵ James H. Raymer, “The Corps Engineer Battalion...”, 16-17.

engineer unit footprint to support a rapid mechanized and airmobile force attack to seize Baghdad. The 130th Engineer Brigade, with the 94th Engineer Battalion (Construction) and the 54th Engineer Battalion (Combat)(Mechanized) as its sole echelon above division engineer battalions, had to maintain over 500 kilometers of LOCs behind the attacking three army divisions (3d Mechanized, 101st and 82d Airborne Infantry Divisions). This LOC task later expanded to almost 800 kilometers when the 4th Infantry Division arrived and attacked north of Baghdad to Tikrit.⁶⁶ After the capture of Baghdad and the CFLCC decision to establish a combined joint task force (CJTF), the 130th Engineer Brigade took on the dual role of CJTF Engineer Headquarters as well. The echelon above division engineer tasks, much as in Vietnam, were to establish base camps, road construction and improvements, port facilities repair, airfield repair and maintenance, oil pipeline repair and maintenance, and roadway clearance. With responsibilities stretching from the coast all the way to northern Mosul, from national level government reconstruction to tactical level combat engineering support to line infantry units, the 130th Engineer Brigade had to rely on its flexible but overwhelmed engineer units to build and fight.⁶⁷ For example, the 94th Engineer Battalion task organized units to the lead division (3d Infantry Division) to enable its airfield seizure, roadway repair, and river crossing operations. Immediately after seizing Baghdad, this battalion organized a roving task force (“TF Neighborhood”) composed of an engineer construction company and combat engineers to construct immediate impact civic action projects in Baghdad neighborhoods⁶⁸. Another example of the “pentathlete” capability of engineers in OIF was D Company, 10th Engineer Battalion (attached to the 3-69 Armor Battalion). This unit, during pre-dawn hours, breached a lane

⁶⁶ Gregg F. Martin, “Victory Sappers: V Corps/CJTF-7 Engineers in Operations Iraqi Freedom, Part 2”, *Engineer: The Professional Bulletin of Army Engineers*, Volume 33, Headquarters, Department of the Army, U.S. Army Engineer School (Fort Leonard Wood: 2003), 4-5.

⁶⁷ Martin, “130th Engineer Brigade...”, 11.

⁶⁸ Martin, “Victory Sappers...”, 6.

through the Iraqi minefields blocking Highway 1, enabling the 1-64 Armor's "Thunder Run" attack into Baghdad. D Company's lead platoon was second in the order of march behind a tank platoon for the actual run through the city.⁶⁹ Less than a week later, this same engineer company was organized as infantry to conduct area-security patrols in an assigned company area of operations in Baghdad, while simultaneously providing engineer assessments of all 2nd Brigade/3d Infantry Division civil infrastructures for later improvements. Even now, the engineers in Baghdad are not only patrolling and conducting area security operations in their assigned areas of operation (AO's), they are also conducting waterborne patrols of the Tigris River, large public utilities infrastructure assessment, repair and construction, LOC maintenance and repair, route clearance and IED clearance, military FOB maintenance and repair, and Iraqi neighborhood project management. Additionally, they are surveying and constructing newly required platoon security outposts to enable the "decisive" U.S. "Surge Plan" for themselves and their fellow combat troops in Baghdad and across Iraq. The problem remains, however, of too few engineer units that can truly construct infrastructure projects that meet both the needs of the local community and the supported troop unit, all in a hostile, non-permissive environment. There still is the need for an engineer unit that can fight alongside maneuver forces to clear enemy from terrain and hold it clear, and still be able to build a useful infrastructure to help capitalize on and retain tactical success that enable operational victories.

In contrast, twentieth century infantry-centric operations in Full Spectrum environments have produced few such nation-building, war-aim delivering victories. For example, the French Tenth Airborne Division in Algiers from 1956 to 1962, conducted attacks, raids, search and

⁶⁹ Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 379.

seizures, and area security operations to attempt to defeat the Algerian ALN/FLN insurgency.⁷⁰ General Jacques Massu conducted this counter-insurgency ruthlessly and without considering his forces limited by conventions. He established rigid population controls and relocations, torturous interrogations, and secret summary executions.⁷¹ Massu conveniently used the FLN terrorist tactics as an excuse to free his men from the limitations of Geneva Conventions.⁷² Consequently, his airborne infantrymen, security forces, and special intelligence agents (a virtual who's-who of COIN experts: Roger Trinquier, Paul Aussaresses, and Yves Goddard)⁷³ were optimized for tactical counter-insurgency success. They quickly saturated the city, took ownership of the night, and conducted highly successful, continuous night-time raids. These operations gleaned decisive intelligence, separated the population from the insurgents, and brought the insurgency to a standstill within two months, and maintained its dismantlement through 1960.⁷⁴ However, upon learning of the full extent of their French troopers' tactics, the French people were so appalled, that they called for the firing of Jacques Massu, ended the Fourth Republic by electing Charles De Gaulle, and ceded Algeria its complete independence by 1962. This handed a strategic victory to the Algerian insurgents rather than the all-star COIN force of Jacques Massu, his French infantrymen, and the special intelligence units assigned to them.⁷⁵ Evidence that, even with complete optimization for kill and capture tactics, supported by national level police, world-class intelligence operatives, and completely un-hindered by international limitations, an infantry-centric force is not the decisive structure for winning the full-spectrum war.

⁷⁰ Alistair Horne, *A Savage War of Peace: Algeria 1954-1962* (London: Macmillan, 1977), 191, 198-199.

⁷¹ Paul Aussaresses, French Army General (retired). *Battle of the Casbah: Terrorism and Counterterrorism in Algeria* (New York: Enigma Books, 2002), 121-122.

⁷² General Jacques Massu, as quoted by Alistair Horne in *A Savage War...*, 196.

⁷³ Aussaresses, *Battle of the Casbah...*, 122.
Horne, *A Savage War...*, 189.

⁷⁴ Horne, *A Savage War...*, 207.

⁷⁵ James D. Campbell, LTC U.S. Army, "French Algeria and British Northern Ireland: Legitimacy and Rule of Law in Low-Intensity Conflict", *Military Review*, March-April 2005, 2.

A more recent example is the III Corps rotation in OIF from 2004 to 2005. In a COIN environment, and limited by international law, III Corps units fought daily engagements against insurgent forces, culminating in the assault on Fallujah in November and December of 2004 and the Iraqi elections in January 2005. LTG Metz, Corps commander, recognized the restraints of international law, and initially, enjoyed enormous production by his maneuver forces within five months of taking control of security operations. His forces killed or captured over 6,000 insurgents by April of 2004. However, he also noted that the insurgent attacks against coalition forces not only didn't diminish,⁷⁶ they kept increasing. Commenting on the decisive value of reconstruction operations, even after the successful re-conquest of Fallujah in 2004, Metz stated, in April 2005, that he could not "...win the peace..." without re-construction of life-sustaining infrastructure, education systems, and government systems.⁷⁷ In a non-permissive COIN environment, the quintessential Full-Spectrum scenario, these reconstruction tasks are the decisive tasks that an infantry-centric organization cannot accomplish. History shows, however, the examples of engineer –centric organizations completing these exact critical tasks.

The next section will review some current force structure recommendations and concepts concerning Army engineer force structure. It will then attempt to piece together the successful aspects of the historical capabilities and capacities of the engineer units reviewed above. This will lead to a subsequent recommendation for future modular force requirements in a more engineer-centric BCT.

⁷⁶ Linda Robinson, "Interview with Lt. Gen Thomas Metz", *U.S. News and World Report* [online] available from <http://www.usnews.com/usnews/news/articles/050204/4metz.htm>; Internet; accessed 27 November 2006.

⁷⁷ Robinson. "Interview with Lt. Gen. Thomas Metz"...

SECTION 2 – AN ENGINEER-CENTRIC FORCE STRUCTURE FOR FULL SPECTRUM OPERATIONS

"Afghanistan will not be resolved by military means...The real challenge is how well the reconstruction mission and the international aid mission is focused...And fundamentally, this is the exit strategy for Afghanistan." ⁷⁸

General James Jones, USMC, Commander,
NATO Military Forces, in a speech to the U.S. Senate Council on Foreign
Relations, 4 October 2006

"The Army lacks Engineer C2 and staff capability within the BCTs. The issue is mainly at the BCT level and hinders an ability to balance reconstruction with maneuver operations. The Army can not afford to just move EAB units into the BCT's without impacting operational level capabilities." ⁷⁹

LTG Peter Chiarelli (MNC-I Commander) and MG James Thurman (4th
I.D.) 2006 report to LTG James Lovelace (Army G3)

There are several recommendations in current literature regarding Army engineer force structure and changes that are needed to make it more capable. First, this paper will look at the Future Engineer Force (FEF) concept, initially proposed by the Army Engineer School. The FEF concept now being implemented by the Army as the solution to providing engineer support for the Modular Force. The FEF was first presented by the Army Engineer School in 2003 as an Engineer White Paper. This concept was designed from the first principles of the Joint Functional Concepts (Battlespace Awareness, Command and Control, Force Application, Operational Protection, Focused Logistics) and the Universal Joint Task List (UJTL).⁸⁰ From these origins shown at Figure 1, Appendix 1, the engineer concepts team came to create a force structure of mission specific engineer companies and battalions that would be generated and then

⁷⁸ GEN James Jones (USMC), speech to U.S. Senate Council on Foreign Relations, as quoted by Sharon Behn, "Reconstruction Seen Key to U.S.Exit", *The Washington Times*, 5 October 2006, 13.

⁷⁹ LTC Shawn Howley, Engineer Pre-Command Course Briefing, Slide #45, August 2006.

assigned to support modular forces. The specific missions a single engineer company would be created for are: Route Clearance, Mobility Augmentation, Engineer Support, Horizontal Construction, Vertical Construction, Topographic, Equipment Support, Geospatial Planning, Asphalt Paving, and a Sapper Company.⁸¹ These companies, as shown on Figure 2, would then be generated under an “effect” specific engineer battalion headquarters such as “construction effects”, “combat effects”, “bridging effects”, “construction support”, “infrastructure repair”, “explosive hazards reduction”, or “geospatial”.⁸² The paper energized a larger, if unsuccessful, engineer effort to halt the disbanding of divisional combat engineer battalions as called for in the Army Campaign Plan. However, the Future Engineer Force concept has produced a limited re-generation of the echelon above division (EAD) engineer battalions that will organize under corps-specific engineer brigades.

This concept of generating engineer forces outside of the modular BCTs has presented some significant problems since implementing began in 2005. The modular BCTs, with their small organic engineer companies, are the centerpiece of Army level Force Generation (ARFORGEN) and are resourced and closely monitored from the Army Staff. When generating a modular BCT for deployment, the BCT ensures that its two organic engineer companies are fully supported within the BCT manning, equipping, and training activities, such that the entire BCT is prepared for deployment timelines. This fact is not insignificant when, as recently happened, the President orders a shortened deployment timeline. At the BCT level, units can react, and with their Army level resourcing and attention, can “surge” forces into theater. The BCT can react in an integrated manner, insuring the engineer companies are just as ready as the whole BCT to deploy. The EAD engineer force module, however, is not organic to the supported BCT or

⁸⁰ Watson, LTC Bryan and Holbrook, LTC David, et al., “The Future Engineer Force White Paper”, (Fort Leonard Wood, Missouri: United States Army Engineer School, 20 April 2004), 9.

⁸¹ Presnell, FEF Smart Book...1.

Division, and, programmed or not, is not under the force generating control of the BCT or Division. Therefore, the EAD engineer units have not been able to generate and deploy as quickly or responsively as the combat BCTs and Divisions.⁸³ This paradigm has produced the dismal engineer support situation in Iraq at present. There are 15 combat BCTs in Iraq (and increasing with the current Surge Plan up to 20 BCTs) all making due with an engineer support structure programmed in late 2005 for a planning assumption of eight BCTs.⁸⁴ The FEF concept that took organic engineer support away from BCTs and Divisions resulted in taking engineers out of the Army Forces Generation spotlight, further resulting in an in-flexible engineer support concept for theaters of war. Further adding to this in-flexibility, if the BCT does not perfectly and omnisciently select the “engineer effects” it might need a year prior to the BCT deployment (so the engineers can be properly warned, generated, and readied), the BCT could easily end up with catastrophically inadequate engineer support. An accelerated deployment timeline (that the engineers could not match) in a “high-intensity” combat environment would yield an unprepared engineer supporting force. Comparing this situation with the divisional engineer battalions from WWII and Vietnam (observed as robustly manned, equipped, and trained), one finds the FEF concept severely wanting.

A second force structure solution comes from MAJ Michael Derosier in his AMSP monograph from March 2005.⁸⁵ Derosier’s paper recommended for engineers to make up ten percent of a deployed force as per his study of 1990’s deployment trends.⁸⁶ With this percentage, Derosier, initially called for a robust engineer battalion that would possess combat, construction,

⁸² Watson, et al, “The Future Engineer Force...”, 12.

⁸³ Peter A. De Luca, Commander 20th Engineer Brigade, Impromptu discussion with author at Fort Leavenworth, 31 January 2006.

⁸⁴ Peter A. De Luca, Impromptu discussion...

⁸⁵ MAJ Michael C Derosier. U.S. Army, “Assessing Engineer Transformational Concepts”, Student Monograph for Advanced Military Studies Program, Fort Leavenworth, April 2005, 43.

⁸⁶ Derosier, “Assessing Engineer Transformational Concepts”..., 28.

bridging and geo-spatial capabilities, to be assigned to each modular BCT.⁸⁷ Then, citing Army resourcing constraints, his paper limited the recommendation to merely a company sized unit.⁸⁸ This ending concept does not fit his initial historical assessment, nor does it truly address the Full-Spectrum requirements of conflict in a modern ground-combat environment. At the time Derosier submitted his thesis, this limitation may have seemed a reasonable presumption. Since then, however, the Army has received government approval to grow by 60,000 soldiers and received its largest budget in history. To truly address the Full-Spectrum of conflict, Derosier's suggested force structure needs more capability.

A third engineer force structure solution was addressed by COL Brian Watson. Watson presented his War College monograph on "Reshaping the Expeditionary Army to Win Decisively" in August 2005.⁸⁹ He argued that the current and planned modular force structures do not address the requirement to conduct the strategically decisive re-construction and stability tasks required of a militarily successful, but now occupying, force. He critiques the extant Maneuver Enhancement (ME) Brigade as a poor rendition of an Army capacity to fulfill SSR requirements. According to the *Army Comprehensive Guide to Modularity*, this brigade is designed mainly to command and control the SSR tasks and for enhancing the maneuver capacity of the modular BCTs and controlling the rear area logistic support security.⁹⁰

Contrary to Watson's contentions, however, is the ME brigade concept proposed by COL James Shumway in his research monograph for the Strategic Studies Institute.⁹¹ Reading this

⁸⁷ Derosier, "Assessing Engineer Transformational Concepts"..., 43, 44.

⁸⁸ Derosier, "Assessing Engineer Transformational Concepts"..., 43.

⁸⁹ COL Brian Watson, "Reshaping The Expeditionary Army To Win Decisively: The Case For Greater Stabilization Capacity In The Modular Force", Strategic Studies Institute, Carlisle: August 2005 [online] available from http://www.army.mil/professionalwriting/volumes/volume3/december_2005/12_05_02.html; Internet; accessed 9 November 2006.

⁹⁰ U.S. Army, *Army Comprehensive Guide to Modularity*, Headquarters Training and Doctrine Command, Fort Monroe: 2004, 5-30.

⁹¹ COL James Shumway, U.S. Army, "A Strategic Analysis of the Maneuver Enhancement Brigade", Strategic Studies Institute, Carlisle, 2005, 7.

study, one finds a close match to the build and fight capabilities displayed by U.S. engineer units in previous conflicts. For example, Shumway's study contended that the ME brigade could accomplish tasks in close support to line combat units, conduct combat operations in its own area operations, conduct functional engineering tasks, or oversee stability and reconstruction operations.⁹² This concept has promise with further refinement and additions to its force structure design aimed at increasing its capacity for full-spectrum operations.

The engineer historical examples in Section Two revealed force structure and commander trends for conducting successful full-spectrum operations with an engineer-centric organization. The engineer battalions in World War II, like the ones in Vietnam, were organized, manned, equipped, and trained as functional engineering battalions, and then trained further as combat units (i.e. Engineer Combat Battalions). Their commanders insisted on training the troops for combat operations, as well as wide ranging construction tasks, understanding the full-spectrum nature of modern combat. The proposed force structure of the modular Future Engineer Force appears to lose this mindset in favor of specialized, single purpose units. Derosier's concept of large engineer companies, much like the ERI program from 1990, does not address the construction capabilities required of the engineer contingency deployments over the last ten years. The modular Maneuver Enhancement (ME) Brigade, as described by Shumway, comes closest to organizing a multi-purpose engineering and full-spectrum combat organization.

The consummate engineer units organized for Full-Spectrum operations have historically been the engineer combat battalion. Validated in World War II and Vietnam, these units consisted of sapper platoons equipped with dump trucks and bulldozers and capable of horizontal, as well as vertical construction. These battalions were repeatedly able to address the immediate, historical concerns of contingency deployments, whether in Vietnam, Bosnia, Haiti, Kosovo,

⁹² Shumway, "A Strategic Analysis...", 6.

Afghanistan, or Iraq. Each of these conflicts needed immediate infrastructure repair and construction, close support to combat units, and civic action projects to enable Army units to win over the populace. These are the exact parameters that the current BCT combat engineer companies, like their infantry partners, are unable to address.

To meet the requirements of an engineer unit that can serve well in Offense, Defense, and SRO environments, the Army needs to re-make these historically successful engineer combat battalions to serve under a Maneuver Enhancement Brigade. They would need multi-role sapper engineer companies composed of 3 sapper platoons, an assault and obstacle platoon, and an earthmoving equipment platoon. Like the engineer combat battalions of the 1940's and 1960's, they would require equipment that not only provides mobility, counter-mobility, and survivability to Offense and Defense scenarios, but also enables immediate impact construction projects and enable structural damage control for stability and conflict termination scenarios. The battalion headquarters would need an operations and planning cell as well as construction design and construction management cells to further enable this construction capability. These changes would allow for an ability to fight and build along the lines of WWII and Vietnam era combat and construction battalions. Taken together, a Maneuver Enhancement (ME) Brigade concept filled with engineer combat battalions, along with, as Shumway describes, augmenting mechanized or armored battalions and an indirect fires coordination cell would create this full-spectrum capability and capacity for an expeditionary, campaign quality modular BCT.

The World War II era engineer combat battalions had a table of basic allowances (TBA) of 720 personnel, four air compressors, eight bull dozers, a road grader, a half-yard steam shovel, two welding set, 15 cargo trucks, 16 dump trucks, and a prime mover.⁹³ Several of these items, not being self-transportable, caused challenges in moving across an austere combat

⁹³ Coll, Keith, Rosenthal, *U.S. Army in World War II*...34.

environment.⁹⁴ The Vietnam era engineer combat battalion, on the other hand, had a table of organization and equipment (TO&E) that called for 794 personnel, organized into four engineer companies (A, B, C, D) with a headquarters and headquarters company (HHC). Their major equipment consisted of “...three cranes, four graders, thirteen scoop-loaders, one sixteen-cubic-foot concrete mixer, and ten dozers.”⁹⁵ This included prime movers and trailers to render the unit fully self-transportable and capable of being air lifted into theater. The concept of self-mobility is key when considering characteristics for an expeditionary, yet campaign quality force structure. This combat engineer battalion design would allow for fighting and building upon arrival. Moreover, the new combat engineer battalion would be task organized under the ME Brigade (with a construction design and management cell added), along with a Military Police Battalion, and Combined Arms Battalion, as called for in Shumway’s concept.⁹⁶ With the ME Brigade concept, the Army would have a BCT sized, expeditionary unit possessing an engineer commander to visualize the new, reconstructed objective of the nation-building mission. The ME Brigade would also have adequate forces to, organic to itself, use combined arms to clear terrain of even armored or mechanized forces, use the MP’s, infantry, and engineers, as needed, to dismount patrol and hold the terrain secure while the engineer units begin re-construction according to the commander’s vision.

The next section will reference the Army’s standard course of action (COA) screening criteria in an attempt to prove the Maneuver Enhancement BCT is a viable concept for an engineer-centric modular BCT. This will necessitate a look at how the ME BCT might be manned, equipped, and trained within the resources and constraints of the current Army and DoD environment.

⁹⁴ Coll, et al, *U.S. Army in World War III*...32-33.

⁹⁵ Ploger, *Vietnam Studies*...215.

⁹⁶ Shumway, “A Strategic Study...”, 7.

SECTION 3 – PROVING THE CONCEPT

“We found that if we concentrated solely on establishing a large security force and targeted counterinsurgent combat operations-and only after that was accomplished, worked toward establishing a sustainable infrastructure...-we would have waited too long...A gun on every street corner, although visually appealing, provides only a short-term solution and does not equate to longterm security...”

MG Peter Chiarelli and MAJ Patrick Machaelis, 1st Cavalry Division Commander and Division Planner, respectively, writing their lessons learned from OIF 2

The Army-screening standards for a viable course of action (COA) are that it is *Feasible*, *Suitable*, *Distinguishable*, *Acceptable*, and *Complete*.⁹⁷ Taking the terms one at a time, this paper will examine the engineer combat battalion and ME Brigade concept to see if it meets the Army COA standards. Looking at the status and number of engineer battalions in the Army during the Reagan era 1980’s versus after ERI in the 1990’s up to OIF, one will see that the Army already gutted itself of critical “build and fight” capability. From 15 corps-level engineer construction battalions and 16 corps-level combat engineer battalions, supporting 10 divisional combat engineer battalions the Army cut the active force to five engineer construction battalions and seven corps level combat engineer battalions⁹⁸ Simultaneous with this active force cut, the Army reserve component corps level engineer battalions were decreased by 29 battalions, and the active duty divisional engineer battalions were increased by eight battalions, albeit very small battalions; only capable of breaching, assault support, and limited survivability. These engineer force cuts represented a tremendous loss in military engineering construction capability as well as, and even more importantly, the loss of over 60 percent of the Army’s rapid deployable (expeditionary) capacity for austere and hostile environment construction. With this in mind, the status quo

⁹⁷ U.S. Army, *FM 5-0 Army Planning and Orders Production*, Government Printing Office, Washington: January 2005, 3-29.

seems un-acceptable compared to almost any proposed improvement.

For proof of the concept, this paper will evaluate the proposed COA in a contingency deployment scenario. The scenario chosen here is the initial OIF deployment, invasion, defeat of the fielded Iraqi Army, and transition to peace-enforcement, based on the author's own experiences as the 3rd Infantry Division engineer planner and engineer current operations officer throughout these phases. *FM 5-0* defines the term *feasible* as able to be accomplished "...within the available time, space, and resources."⁹⁹ *Acceptable* – "The tactical or operational advantage gained by executing the COA must justify the cost in resources, especially casualties." This assessment is largely subjective. *Suitable* – Each COA must accomplish the mission and comply with the commander's planning guidance. *Distinguishable* - each COA must differ significantly from the others. *Complete* - A complete COA positions the force for future operations, provides flexibility to meet unforeseen events during execution, and also gives subordinates the maximum latitude for initiative.¹⁰⁰

The 3rd Infantry (I.D.) began planning for the deployment and possible invasion of Iraq in July 2002. At that time, the Division was task organized to fight under control of the I Marine Expeditionary Force (MEF). Recognizing that the numerous limitations of Army divisional engineer battalions would not measure up to the austerity of the deserts, complexity of the canals and waterways, and enormity of the infrastructure problems of the Iraq operating areas, the engineer planner scheduled a planning session with the I MEF engineer staff. This planning session was held at Camp Pendleton in September 2002, and, along with some Naval Construction Regiment planners, the MEF and 3rd I.D. were able to develop multi-functional construction and combat engineer battalion formations to enable initial force bed-down, force

⁹⁸ Raymer, "The Corps Engineer Battalion...", 2.

⁹⁹ U.S. Army, *FM 5-0* ..., 3-29.

¹⁰⁰ U.S. Army, *FM 5-0* ..., 3-30.

protection, assault support, lines of communication support, displaced person facilities, and prisoner of war facilities task accomplishment. With this engineer support plan in place, the 3rd I.D. engineer planners deployed to Kuwait by early January 2003. However, 3rd Army changed the ground maneuver plan in mid-December 2002 to make the V(US) Corps the higher command headquarters of 3rd I.D. This change negated all of the pre-planned engineer support from the I MEF and naval engineers that would have augmented the limited capabilities of the 3rd I.D. engineer battalions. The main problem with this new arrangement became evident when the naval and marine engineers were deployed and able to support the I MEF by late January 2003, the V Corps engineer construction and combat battalions, now tasked to support 3rd I.D., were not in Kuwait and prepared to support until early March. By that time, the 3rd I.D. had deployed each of its three BCTs out to austere desert tactical assembly areas, with no capability in the divisional engineer battalions to provide force bed-down support (i.e. field latrines, showers, covered sleeping/work areas, ammo storage, etc.). As the units did not begin the invasion until 20 March, this meant the BCTs lived in abject squalor for about 30 days prior to the invasion. With the advent of the early spring desert sand-storms (*shamals*) the 3rd ID soldiers had a grim month, only hoping that the invasion would come quick so as to shorten the miserable conditions of waiting.

During the invasion, the divisional battalions and the divisional engineer brigade performed their mobility tasks well enough to deliver the 3rd ID's combat power into Baghdad in less than 17 days. These divisional engineer units were designed with armored/mechanized mobility and assault support in mind and did not disappoint. The problem, however, came when the high-intensity maneuver warfare turned into nation-building and counter-insurgency. Once again, as in Kuwait, the divisional engineers were woefully ill-equipped to perform these decisive task areas. Just as important, the legacy BCTs themselves were no better equipped or trained for full-spectrum conflict. In this situation, the infantry and armor heavy BCTs not only needed to clear and retain an area, but to actually win, needed also to build civic action projects and government infrastructure and capacity. Unfortunately, the 3rd Infantry Division's legacy BCTs

as well as the new modular BCTs, were not designed to accomplish these latter tasks.¹⁰¹

With the Army's OIF strategy of "Clear, Control, and Retain", it would seem illogical and infeasible to pursue the strategy without an organization, central to the deployed force, that can accomplish these tasks in an integrated, synchronized manner. A Maneuver Enhancement BCT organized with engineer combat battalions, as described in Figure 5 at Appendix 1, would be able to support the force-bed-down missions in austere conditions, conduct the close combat mobility and assault support tasks, and immediately transition to emergency infrastructure repair and establishment of law and order. The ME BCT, designed properly, can clear and hold and build, enabling the Army's COIN strategy.

Is it feasible to activate, man, and equip these ME BCTs? The answer is that the Army already plans to activate them.¹⁰² In other words, it is feasible. The 555th Engineer Group at Fort Lewis, Washington has been re-activated as the 555th Combat Support Brigade (Maneuver Enhancement). The unit retained the engineer colonel as its commander, as well. According to Colonel David Hampton's modular force update briefing¹⁰³, these ME BCTs are designed, just like the 555th ME BCT is now, to command engineer construction battalions, engineer combat battalions, ADA battalions, MP battalions, and Combined Arms (Armor/Infantry) battalions. Their purpose, according to Hampton is "...to conduct security and functional operations in a designated AO IOT [in order to] enable force application, focused logistics, battlespace awareness, and protection."¹⁰⁴ Figure 4 at Appendix 1 shows the concept of employment for the ME BCT on a linear battlefield where the combat BCT is closer to the enemy objective and major combat operations. The ME BCT is shown securing the rear against a level II threat. This type

¹⁰¹ U.S. Army, Army Comprehensive Guide ..., 5-29.

¹⁰² COL David Hampton, U.S. Army, "Modular Force Update", Combined Arms Center, Current Force Integration Directorate, Fort Leavenworth Kansas, 28 February 2006, slide 7.

¹⁰³ Hampton, Modular Force,...7.

¹⁰⁴ Hampton, "Modular Force...", 116.

of threat is exactly the type of threat now faced in Iraq: a guerilla or terrorist force acting against high value assets with limited engagement tactics in conjunction with IEDs, mortar, rocket, and/or handheld rocket launcher supporting fires. This diagram at Figure 4 shows the perplexing logic of Army force design when it comes to the ME BCT. It portrays the combat BCT fighting the very high-intensity threat for which it was designed and optimized to fight, and the ME BCT the same in turn. However, in Iraq you see the direct opposite of this very concept. The combat BCTs are fighting a threat for which they are not designed nor optimized to win against. They have the killing power to clear insurgents, the infantry to control the ground for short durations, but no military construction retain the successes for the duration of the campaign, nor stability construction or nation-building capability to culminate the victory. This engineering shortfall renders all the COIN combat action successes as transitory, with no way to build on them for operational wins. In fact, there is only one ME BCT activated in the Army that is optimized to fight and win a Level II threat fight; that can clear the enemy with combat operations, hold ground, retain it for the duration of the campaign, and also nation-build. In short, the ME BCT is feasible and is acceptable to the Army's concept of employing it to transition combat-cleared areas into stable environments.

Is it suitable for accomplishing the mission? The ME BCT with engineer combat and construction battalions attached, most resembles the engineer combat groups from Vietnam in its ability to fight and build. Along with the Army design concept to further enhance the combat and stability capacity of the ME BCT with a Combined Arms battalion, an MP Battalion, a CA Battalion, and a fires coordination cell, this organization actually seems the most suitable for conducting successful Full-Spectrum operations. One could easily expect 15 of these ME BCTs to be much more effective and optimized to clear, hold, and build in Iraq than the 15 (soon to be 18 or 20) combat BCTs conducting mostly kill and capture operations now.

The ME BCT is also distinguishable as a solution to the full-spectrum problem. It is the only solution, so far, that entails organizing a combat battalion of armor or infantry along with

battalions of MPs, Civil Affairs, and fire support coordination augmentation to an “engineer-like” brigade headquarters.¹⁰⁵ These steps, together, produce a unique organization that is optimized to clear, control, and retain.

Is the concept complete, however? The Army uses a set of parameters that define the total resource impact and requirement of a new concept for force structure. Listed here, these are Doctrine, Training, Leader development, Organization, Material, Personnel, and Facilities (DTLOMPF). This criterion of Doctrine is where the ME BCT concept is weakest. Although there are numerous doctrinal publications for each functional (engineer, MP, Civil Affairs, Air Defense Artillery, etc) battalion, there is no current doctrine for the overall employment of the ME BCT. Even more so is the dearth of doctrinal-based training requirements for the brigade level staff and leadership. The battalion level functions, training, and leader development are well established in doctrine, the main issue becomes training and developing such an all-arms proficient soldier at the ME BCT staff level.¹⁰⁶ This would entail training to such a level that the officer can plan and coordinate an integrated mission of these diverse battalions. As COL Shumway notes “...there is a real challenge in developing, selecting, and assigning commanders and staff with the broad experience necessary to effectively lead these complex organizations.”¹⁰⁷ As the initial concept calls for converting an existing engineer brigade into a Maneuver Enhancement BCT, most of the material and personnel are extant.¹⁰⁸ Assigning select officers and NCO leaders from the functional battalions up to brigade headquarters would meet the remaining personnel requirements. The material requirements would also be met by activating on an existing functional brigade headquarters, and with the Army already expecting the programming of these ME BCTs, the remaining material will follow along new equipment

¹⁰⁵ Shumway, “A Strategic Analysis...”, 7.

¹⁰⁶ Shumway, “A Strategic Analysis...”, 16.

¹⁰⁷ Shumway, “A Strategic Analysis...”, 16-17.

fielding timelines. The challenge of providing facilities for the ME BCT is handled much the same as the previous two. By re-forming an existing brigade headquarters, the ME BCT can merely use that brigade infrastructure and amend it with on-base work requests, or use its own engineer expertise to program a new one. With the exception of ME BCT brigade-level doctrine and training, this concept represents a complete COA. Moreover, because it relies heavily on using existing assets, it can be implemented relatively quickly.

¹⁰⁸ Shumway, :”A Strategic Analysis...”, 16.

SECTION 4 – CONCLUSION

“The notion of information superiority and intelligence dominance on a transparent battlefield is equally delusional. This nonsense has misguided our actions. We would be better off assuming information inferiority and proceeding from there in determining how to plan, organize, and equip for success.”¹⁰⁹

Major General (ret.) J.B.A. Bailey, speech at the 2006 Eisenhower National Security Series Conference on “Irregular Challenges: Implications for U.S. and Allied Force Transformation”

This paper has endeavored to prove the need for a “different” BCT for Full-Spectrum operations, and that this new BCT needs to be the more engineer-centric Maneuver Enhancement BCT. The current modular BCT has some obvious shortcomings in terms of limited engineer, military police, and civil affairs capability. These limitations constrain the modular BCTs capability and capacity to wage Full-Spectrum operations; especially the low-intensity conflict portion of the spectrum. Many of the limitations are the product of un-validated assumptions regarding the concepts of “peace dividend”, “information dominance”, and “rapid decisive operations”.

These three concepts coalesced in the late 1990’s to induced Army leaders, constrained by shallow resources, to make hard choices on force structure. Assessments of the OIF counter-insurgency and re-construction challenges against the capability shortfalls in the modular BCT design have revealed the danger of the Army’s assumptions and the faultiness of its choices in reducing responsive, deployable engineer construction units. As rapidly as a current modular BCT can kill, capture and clear an area of insurgents, there is no commensurate capability in the BCT that can immediately build or re-build infrastructure and government capacity to enable an operational success. These inabilities render it in-decisive in Full-Spectrum operations. The

¹⁰⁹ MG (ret.) J.B.A. Bailey, as transcribed by COL William “Trey” Braun, Deputy Director, Strategic Studies Institute, transcription of speeches at the “Irregular Challenges: Implications for U.S. and

BCT needs some capacity to produce longer term progress from the transient tactical victory of killing and capturing the enemy.

In solving this capability gap, Section 1 looked at a survey of historical examples of the combat and construction capabilities of some venerable engineer formations. This historical review highlighted their portent for current and future full-spectrum operations. Those engineer organizations of World War II and Vietnam showed a clear ability to fight as well as build, enabling a robust capability for operational success. What's more, in the manpower constrained environment of modern deployments, those historically multi-purpose engineer units helped combined arms commanders meet their plethora of infantry tasks while still maintaining good capacity for combat engineering and construction. The Army's force structure planners, however, have historically forgotten how valuable and flexible its engineer force is to mission success. As one Army historian writes: "...while maneuver force commanders have generally clamored for more engineers during combat operations, this need has often been forgotten when post-conflict demobilizations...required manpower caps..."¹¹⁰

SUMMARY OF FINDINGS AND RECOMMENDATION

Several solutions for the engineer-centric force structure were addressed in Section 2. This paper examined the Future Engineering Force concept from the Fort Leonard Wood engineer concepts division, along with a concept of a more robust engineer company organic to the current combat BCT by MAJ Derosier, and finally an ME BCT concept with more robust engineering battalions. The ME BCT concept appeared most promising and is the recommended solution.

Allied Force Transformation – Summary and Analysis”, *Proceedings of the AUSA Convention Conference*, (Carlyle: Strategic Studies Institute, 2006), 3.

The ME BCT has proven to be a viable option. The 555th ME BCT just returned from duty in Iraq as the 555th ME BCT, and is now implemented at Fort Lewis. This new brigade structure was activated on the former 555th Engineer Group (brigade level). By activating on an engineer brigade-level organization, the ME BCT retained the combat engineer battalion and the construction engineer battalion capabilities of the 555th, as well as added chemical battalion and air defense capabilities upon re-organizing as an ME BCT. This is a short term fix, as there are less than ten total active-duty separate MP, chemical, or engineer brigades for transforming more ME BCTs.

COL Toomey, the first ME BCT commander wrote an article in 2005 upon the 555th ME BCT's return from Iraq. In it, he stated that the ME BCT "...is truly groundbreaking. It not only has no formal antecedent, but it looks to bring to the forefront the application of freedom of action and force protection as disciplines [that]...clearly recognize the evolving nature of warfare..."¹¹¹ With continued study and development of doctrine and promising training programs, the ME BCT will meet its challenges of training and leader development.

If the National Security Strategy is correct about the most common form of future warfare being full-spectrum combat, then the ME BCT will have to learn quickly; as, properly manned, equipped, and trained, it will be the most useful BCT organization in the conflicts to come.¹¹² Some short-term training solutions are to conduct staff and unit field exercises, controlled and resourced within the post-level agencies.

The National Security Strategy as well as the Army's website briefing, *The Army Campaign Plan*, state that the most likely future conflicts will be low-intensity and irregular. At

¹¹⁰ Larry Roberts, PhD, "The Evolution of the Engineer Force...", 46.

¹¹¹ COL Christopher J. Toomey, "A Horse of A Different Color: The Maneuver Enhancement Brigade", *Engineer: The Professional Bulletin of Army Engineers*, Jul-Sep 2005, Fort Leonard Wood, 22.

¹¹² U.S. Department of Defense. *The National Military Strategy of the United States of America*, U.S. Government Printing Officer, Washington: 2004, 4.

present, however, the Army's focus and priority for manning, equipping, and training for deployments is on combat BCTs. These combat BCTs are optimized for high-intensity conflicts, but are the main units in the Army Forces Generation system for preparing to deploy to OIF or OEF; both low-intensity, irregular conflicts.

A longer term fix would be to develop 42 ME BCTs rather than 42 high-intensity combat BCTs, for deployment to future irregular, low-intensity conflicts. With the Army's OIF strategy of "Clear, Hold, and Build", it would seem infeasible to pursue the strategy without an organization, central to the deployed force, that can accomplish these tasks in an integrated, harmonized manner. A Maneuver Enhancement BCT organized with engineer combat battalions would be able to support the force-bed-down missions in austere conditions, conduct the close combat mobility and assault support tasks, and immediately transition to emergency infrastructure repair and establishment of law and order. The ME BCT, designed properly, can clear and hold and build to meet the COIN strategy of clear, control, retain.

APPENDIX 1

An Appendix here is used as the repository for figures and concepts alluded to in the main body. The intent is that their inclusion here will add clarity to the concepts as discussed in the paper.

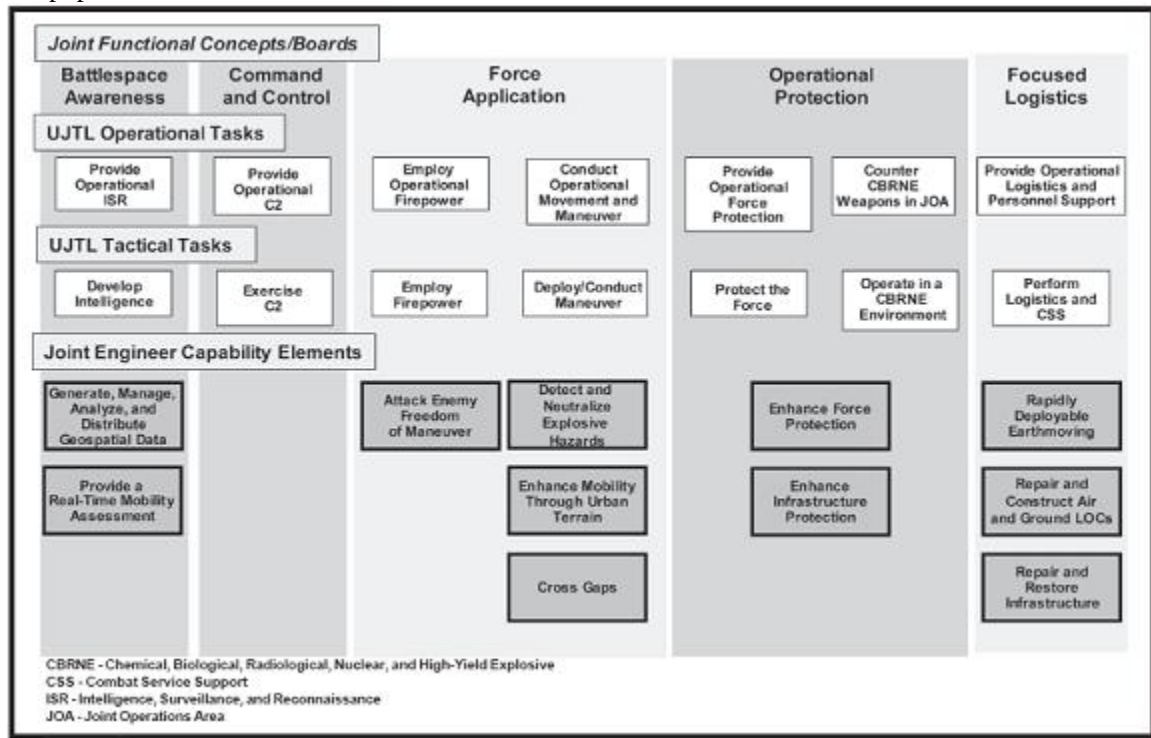


Figure 1. Deriving Joint Capabilities Elements for the Future Engineer Force. Source: Watson, LTC Bryan and Holbrook, LTC David, et al., "The Future Engineer Force White Paper", United States Army Engineer School, Fort Leonard Wood, MO: 20 April 2004, 9.

The Figure 1, above, depicts the methodology that the Future Engineer Force authors used in deriving the essential task list for their proposed engineer concept. Beginning with broad Quadrennial Defense Review (QDR) Joint Concepts and general terms, they distill these down to tactical force level tasks. These task areas were then grouped with a specialty battalion level headquarters and developed into specific mission types for a specific engineer company (see next Figure 2).

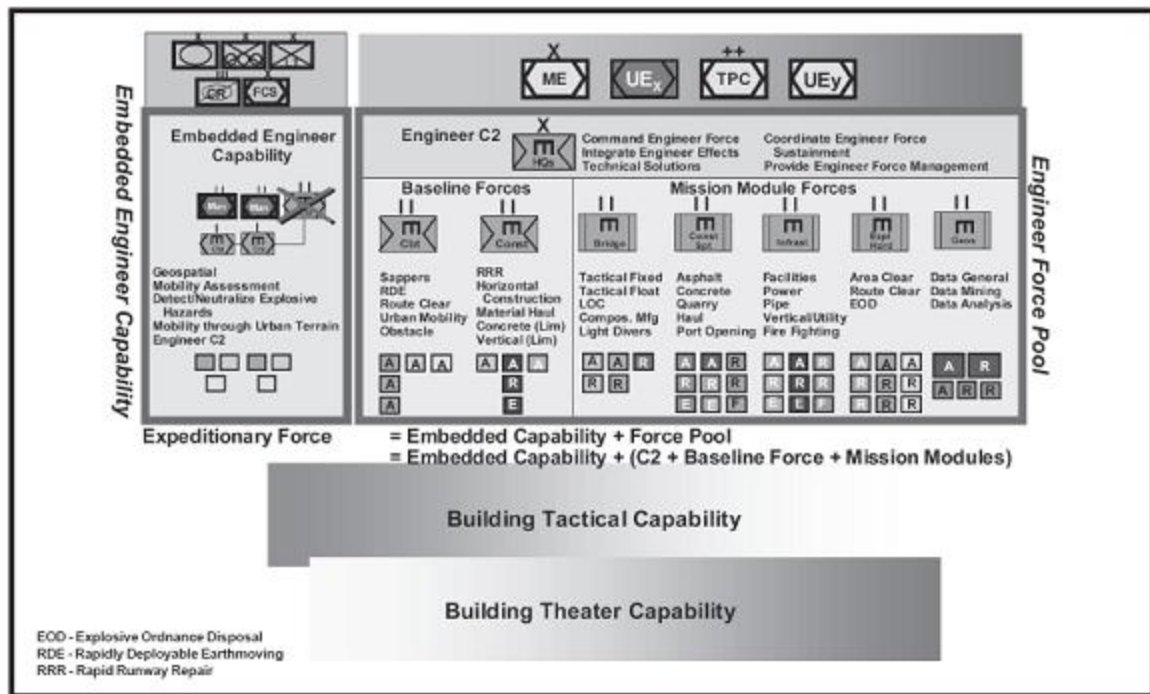


Figure 2. Future Engineer Force Capability Generation with Task Specific Force Pools. Source: Watson, LTC Bryan and Holbrook, LTC David, et al., "The Future Engineer Force White Paper", United States Army Engineer School, Fort Leonard Wood, MO: 20 April 2004, 12.

The above Figure 2 is meant to be read as Forced or Early Entry combat operations begin on the left of the slide at the beginning of a Theater or JTF campaign begins. As time progresses, the engineer force flow and capability level increases in moving from left to right. The figure depicts the limited capability of early entry, embedded engineer companies (two each) in the current modular BCTs. Also shown are the specialty battalions and their capability sets listed below the battalion unit icon.

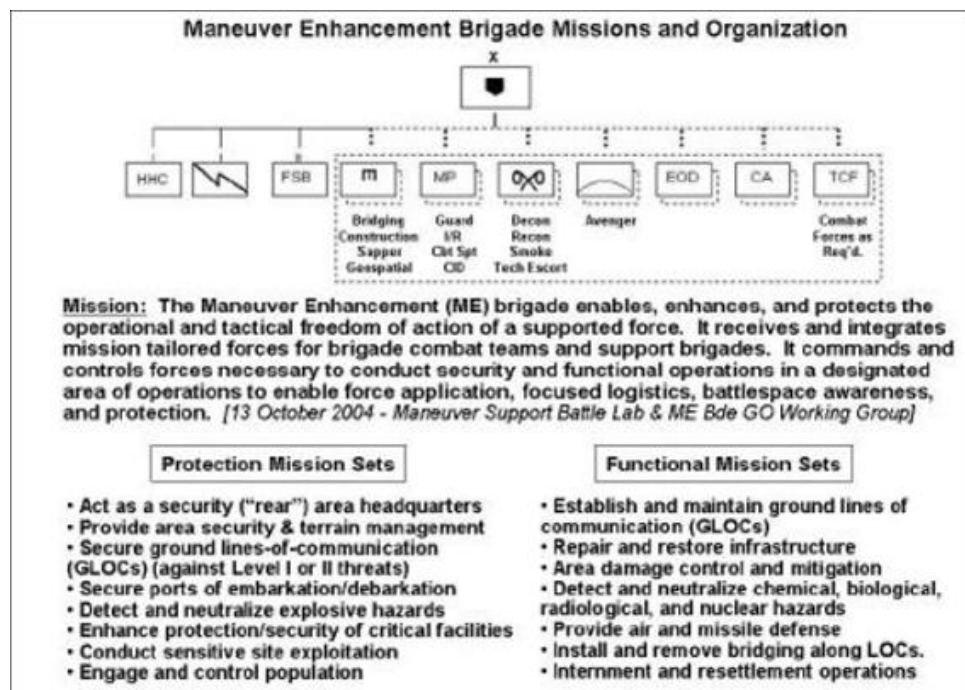


Figure 3. The Organization and Mission Set Concept for the ME Brigade. Source: Shumway, James. “A Strategic Analysis of the Maneuver Enhancement Brigade”, Strategic Studies Institute, Carlisle, 2005, 7. (Note the many engineer construction [functional] missions as well as the “provide area security”, and “engage and control the population” missions.)

Figure 3 (above) depicts Shumway’s understanding of the wide ranging capability intended for the ME BCT. It also depicts the expected battalion organizations that would be commanded and employed by the ME BCT.

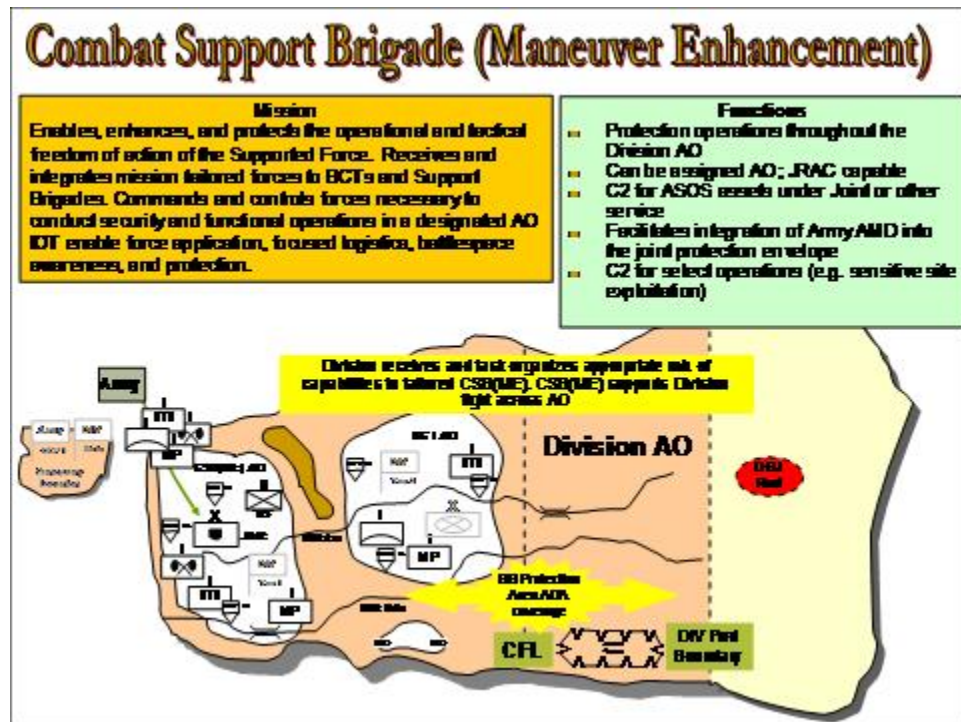


Figure 4. Employment Concept for the Maneuver Enhancement Brigade. Source: COL David Hampton, “Modular Force Update”, Combined Arms Center, Current Force Integration Directorate, Fort Leavenworth Kansas, 28 February 2006, slide 116.

Figure 5 is an Army “linear battle” in a high intensity conflict, concept for explaining where in the battlefield it envisions employing an ME Brigade. This slide also provides a concept for the mission and functions the ME Brigade would provide to the overall force commander.

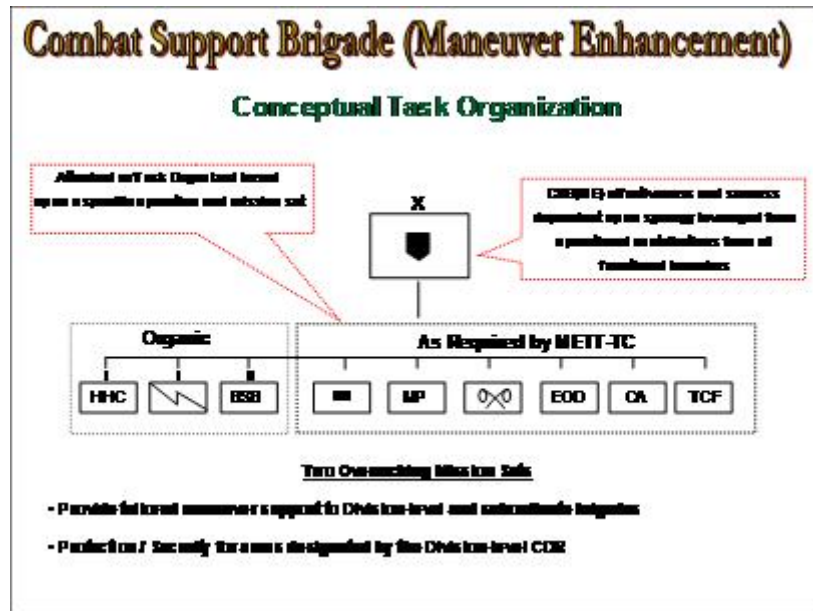


Figure 5. Force Structure Design for the Maneuver Enhancement Brigade. Source: Hampton “Modular Design...”, slide 117. (TCF above stands for Tactical Combat Force: usually a combined arms battalion attached to the rear area to engage and defeat up to Level II threats in tactical combat.)

Figure 5 depicts an example of how an ME BCT could be organized for conducting a stability and reconstruction mission as part of a corps sized combat formation on a linear battlefield.

BIBLIOGRAPHY

PRIMARY SOURCES

- Aadland, Major General Anders B. and Allen, James L. "Engineer White Paper - Into The Objective Force", *Engineer: The Professional Bulletin for Army Engineers*, April 2002, 4-9.
- Addison, John K. "The Making of a WWII Battalion Commander", *Army Magazine*, Volume 56 No. 3, March 2006, 60-70.
- Ancker, Clint. Personal interview with author 3 November 2006, Leavenworth.
- _____. as quoted by Howley, Shawn, LTC. Engineer Pre-Command Course Briefing August 06,
- Aussaresses, Paul, French Army General (retired). *Battle of the Casbah: Terrorism and Counterterrorism in Algeria*. New York: Enigma Books, 2002.
- Behn, Sharon. "Reconstruction Seen Key To U.S. Exit", *The Washington Times*, 5 October 2006. 13.
- Bowen, Stewart, interview with Ifill, Gwen "IRAQ RECONSTRUCTION WOES", *PBS NEWS* [online] available at www.pbs.org/newshour/bb/middle_east/jan-june06/reconstruction_1-30.html; Internet; accessed 30 Aug 06.
- Chiarelli, Major General Peter W. and Michaelis, Major Patrick R. "Winning the Peace: The Requirement for Full-Spectrum Operations", *Military Review*, Fort Leavenworth: July-August 2005 [online] available from http://www.army.mil/professionalwriting/volumes/volume3/october_2005/10_05_2.html; Internet; accessed 20 November 2006.
- DeLuca, COL Peter A. Impromptu briefing for CGSC and AMSP engineer students, 31 January 2007.
- Galula, David. *Counterinsurgency Warfare Theory and Practice*, Fourth ed., Frederick A. Praeger, New York: 1968.
- Hampton, David. "Modular Force Update", Combined Arms Center, Current Force Integration Directorate, Fort Leavenworth Kansas, 28 February 2006.
- Hibner, MAJ Daniel. Personal interview with author, 6 November 2006, Fort Leavenworth, KS.
- Hickey, LTC Christopher. Personal interview with author 25 September 2006.
- Martin, Colonel Gregg F. U.S. Army, "130th Engineer Brigade Lessons Learned and Recommendations From Operation Iraqi Freedom", *Engineer: The Professional Bulletin of Army Engineers*, Volume 33, October-December 2003, 11-13.
- _____, "Victory Sappers/CJTF-7 Engineers in Operation Iraqi Freedom Part 2: Since Liberation", *Engineer: The Professional Bulletin of Army Engineers*, Volume 33, Headquarters, Department of the Army, U.S. Army Engineer School (Fort Leonard Wood: 4-10).
- Ollivant LTC Colonel Douglas A. and Chewning, 1LT Eric D., "Producing Victory: Rethinking Conventional Forces in Counterinsurgency Operations", *Military Review*, July-August 2006, 50-59.
- Ploger, Robert R., Major General, *Vietnam Studies: U.S. Army Engineers 1965-1970*, U.S. Army

- Office of Military History, U.S. Government Printing Office, Washington. 1974.
- Presnell, Mike, "FEF Smart Book Consolidated". Fort Leonard Wood, Missouri: U.S. Army Engineer School, March 2005.
- Robinson, Linda. "Interview with Lt. Gen. Thomas Metz", *U.S. News and World Report* [online] available from <http://www.usnews.com/usnews/news/articles/050204/4metz.htm>; Internet; accessed 27 November 2006.
- Schoomaker, Peter GEN, et al. transcription of American Enterprise Institute Panel meeting, Washington: 11 April 2005 [online] available from <http://www.aei.org/events/filter.all.eventID.1011/transcript.asp>; Internet; accessed 20 November 2006.
- Schultze, James M. The author served as the Commander, B Company, 11th Engineer Battalion, 3d Infantry Division during Kosovo Rotation 3A from May to November 2001.
- Toomey, Colonel Christopher J. "A Horse of A Different Color: The Maneuver Enhancement Brigade", *Engineer: The Professional Bulletin of Army Engineers*, Jul-Sep 2005, 22-23.
- U.S. Army, *Army Campaign Plan*, briefing slides [online] available from www.army.mil; Internet; accessed 9 November 2006.
- U.S. Army, *Army Comprehensive Guide to Modularity*, Headquarters Training and Doctrine Command, Fort Monroe, 2004.
- U.S. Army, *2006 Army Posture Statement*, briefing slides [online] available from www.army.mil/institution/leader/posturestatement/; Internet; accessed 9 November 2006.
- U.S. Army, *FM 3-0 Operations*, Government Printing Office, Washington: 14 June 2001.
- U.S. Army, *FM 3-07, Stability and Reconstruction Operations*, Government Printing Office, Washington: February 2003.
- U.S. Army, *FM 5-0 Army Planning and Orders Production*, Government Printing Officer, Washington, January 2005.
- U.S. Army, *U.S. Army Transformation Road Map 2003*, U.S. Army Publishing Agency, Washington: 2003.
- U.S. Army, *3d Infantry Division AAR – Operation Iraqi Freedom*, May 2003 [online] available from www.globalsecurity.org/military/library/report/2003/3id-aar-jul03.pdf; Internet; accessed 10 November 2006.
- U.S. Department of Defense, *Dictionary of Joint Terms* [online] available from <http://www.dtic.mil/doctrine/jel/doddict>; Internet; accessed 8 November 2006.
- U.S. Department of Defense. *The National Military Strategy of the United States of America*, U.S. Government Printing Officer, Washington: 2004.
- U.S. Joint Forces Command. *Glossary of Terms* [online] available from <http://www.jfcom.mil/newslink/storyarchive/2001/pa020101.htm>; Internet; accessed 20 October 2006.
- Wass de Czege, Huba. "Using Information Technologies to Reduce the Army's Echelons", *Army Magazine*, April 2002 [online] available from <http://www.ausa.org/webpub/DeptArmyMagazine.nsf/byid/CCRN-6CCS3E>; Internet; accessed 20 November 2006.
- Watson, LTC Bryan and Holbrook, LTC David, et al., "The Future Engineer Force White Paper", Fort Leonard Wood, MO: United States Army Engineer School, 20 April 2004.

SECONDARY SOURCES:

- Baldwin, William C. "Army Engineers in Post-War Reconstruction: The Philippines, Japan, and Germany, 1945-1947", Washington: Office of History U.S. Army Corps of Engineers, 2003.
- Beck, Alfred, Abe Bortz, Charles Lynch, Lida Mayo, and Ralph F. Weld, *The United States Army in World War II, The Technical Services, The Corps of Engineers: The War Against Germany*, U.S. Army Center of Military History, Washington: GPO, 1985.
- Breemer, Dr. Jan S (PhD). "Statistics, Real Estate, and the Principles of War", *Military Review*, Volume LXXXVI, September-October 2006, No 5, 84-89.
- Campbell, James D. LTC U.S. Army. "French Algeria and British Northern Ireland: Legitimacy and Rule of Law in Low-Intensity Conflict", *Military Review*, March-April 2005, 2
- Coll, Blanche D., Jean E. Keith, and Herbert H Rosenthal, *The United States Army in World War II: The Technical Services, The Corps of Engineers: Troops and Equipment*, Office of the Chief of Military History, Washington: Government Printing Office, 1958
- Derosier, Major Michael C. U.S. Army, "Assessing Engineer Transformational Concepts", Student Monograph for Advanced Military Studies Program, Fort Leavenworth: April 2005.
- Hawkins William, "Protracted War: The Real Revolution in Military Affairs", *Army Magazine*, Vol.56, No. 11, 10.
- Hechler, Ken. Holding the Line: The 51st Engineer Combat Battalion and the Battle of the Bulge December 1944 – January 1945, Washington: U.S. Army Corps of Engineers, 1988.
- Horne, Alistair. *A Savage War of Peace: Algeria 1954-1962*, London: Macmillan, 1977.
- Howley, LTC Shawn. Engineer Pre-Command Course Briefing, Power Point Slide #45, August 2006.
- Joes, Anthony James. *Resisting Rebellion: The History and Politics of Counterinsurgency*, Lexington: The University Press of Kentucky, 2004.
- Owen, Mackubin T. PhD, "The Vietnam War: Winnable After All", Editorial, Ashbrook Center For Public Affairs at Ashland University, December 1999 [online] available from <http://www.ashbrook.org/publicat/oped/owens/99/vietnamwar.html>; Internet; accessed 8 November 2006.
- McDonnell, Janet A., After Desert Storm: *The U.S. Army and the Reconstruction of Kuwait*, Department of the Army, Washington: U.S. Government Printing Office, 1999.
- Mellilo, Michael R. "Outfitting a Big-War Military with Small-War Capabilities", *Parameters*, vol. xxxvi, no. 3, Autumn 2006, 22-35.
- Raymer, James H. "The Corps Engineer Battalion in Contingency Operations", Master's Thesis, Fort Leavenworth, 2001.
- Sewall, Sarah. "Modernizing U.S. Counterinsurgency Practice: Rethinking Risk and Developing a National Security Strategy", *Military Review*, Volume LXXXVI, September-October 2006, No 5, 2006: 47-58.
- Shumway, James. "A Strategic Analysis of the Maneuver Enhancement Brigade", Carlisle: Strategic Studies Institute, 2005.

- Turabian, Kate L. *A Manual for Writers of Term Papers, Theses, and Dissertations*. 6th ed. Chicago: University of Chicago Press, 1996.
- Wass de Czege, Huba. "Some Relevant Wisdom", *Army Magazine*, June 2006 [online] available from <http://www.ausa.org/webpub/DeptArmyMagazine.nsf/byid/KHYL-6PWJ5N>; Internet; accessed 20 November 2006.
- Watson, Colonel Brian G. "Reshaping The Expeditionary Army To Win Decisively: The Case For Greater Stabilization Capacity In The Modular Force", Carlyle: Strategic Studies Institute, August 2005 [online] available from http://www.army.mil/professionalwriting/volumes/volume3/december_2005/12_05_2.html; Internet; accessed 19 November 2006.
- Mayo, Marlene J. Chapter 1, "American Wartime Planning for Occupied Japan", pp. 3-51, published in: *Americans as Proconsuls: United States Military Government in Germany and Japan, 1944-1952*, Carbondale and Edwardsville, Southern: Southern Illinois University Press, 1984.