

Preparing the Engineer Brigade for Operation Iraqi Freedom

By Colonel Don C. Young

"Engineers are everywhere! No matter where I go in Baghdad, I see engineers hard at work, doing a wide variety of missions."

—Brigadier General Martin Dempsey
Commander, 1st Armored Division
16 July 2003

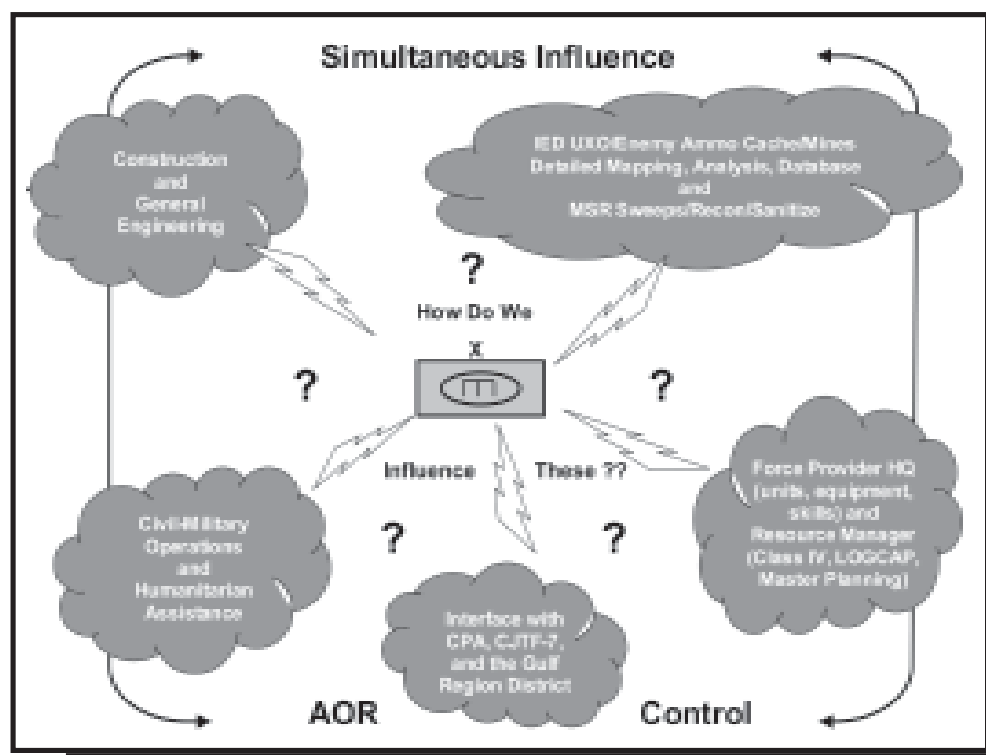
How does a unit prepare for stability operations and support operations (SOSO) missions with high-intensity conflict operations occurring daily? This article incorporates the initial lessons learned from the 1st Armored Division (1AD) Engineer Brigade operations in Baghdad and recent observer-controller trends used to prepare an engineer brigade headquarters during a division command post (CP) exercise for a follow-on Operation Iraqi Freedom-designated deployment. The article focuses on three key themes: mission areas, CP operations, and predeployment training.

Mission Areas

The figure below outlines the five baseline mission areas that an engineer brigade (or division engineer in the case of a light division) must influence for the mission success of the division. Some may classify them as "glass balls," but I would rather treat them as mission-essential task

list items. This enables the engineer brigade and subordinate units such as sapper battalions and assigned echelon-above-division (EAD)/echelon-above-corps (EAC) units to conduct further mission analysis to identify the battle tasks required for engineers at all levels. These battle tasks and their information management requirements will drive the structure, operations, and systems of the engineer brigade CPs: engineer main (EMAIN), assistant division engineer (ADE), engineer tactical action center (ETAC), and engineer rear (EREAR). Once engineer leaders understand the missions of the Operation Iraqi Freedom theater and how to run the engineer brigade CPs, they can focus the predeployment training program on the essential individual and collective tasks required for mission success.

The engineer brigade must configure itself to handle simultaneously the role of the five mission areas. Each one must be treated separately with fully assigned assets for



Baseline Mission Areas Engineers Must Influence

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the 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 the 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 Washington Headquarters Services, Directorate for Information Operations and Reports, 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 a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE JUN 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE Preparing the Engineer Brigade for Operation Iraqi Freedom			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Engineer School,14010 MSCoE Loop BLDG 3201, Suite 2661,Fort Leonard Wood ,MO,65473-8702			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 5	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

command and control responsibility. A construction management section (CMS) is an absolute necessity, whether augmented from a combat or construction engineer group or combat heavy battalion headquarters or fielded “out of hide” with school-trained engineer officers and senior non-commissioned officers assigned to the brigade headquarters. Also, the use of liaison officer augmentation at key locations will enhance situational awareness and parallel planning. In our case, the EMAIN often was able to inform the division main CP about engineer missions about to be assigned to the division from Coalition Joint Task Force-7 (CJTF-7)/Coalition Provisional Authority (CPA) because of the highly effective use of liaison officers. Another area of interest is contract construction completed by many different programs and “colors” of money. The key to success is the ability to access, track, and influence the division priorities with construction contracting capabilities within the commanders’ discretionary funds, civil affairs, the CPA, and the Gulf Region Division.

The engineer brigade civil affairs officer (S5) pays big dividends for the EMAIN. The S5’s interaction with the Assistant Chief of Staff, G5 (Civil Affairs), the division Civil-Military Operations Center (CMOC), and civil affairs units will help identify and obtain construction contracts and hard-to-get Class IV supplies. In some cases, sapper battalions are attached to their brigade combat team (BCT) headquarters. Even under this type of command and support relationship, the force provider role of supplying trained and ready forces never ends for the division engineer. Therefore, the engineer brigade commander (or division engineer) retains the essential responsibilities for maintaining engineer equipment, supplying force protection barrier material, and providing construction and additional sapper capabilities. A key element to success is sapper battalion reporting (dual chains of command) and functional area stovepipe requirements that must remain in effect to maximize engineer support across the entire division sector. The Assistant Division Commander (Support), the Division Support Command (DISCOM), and the Assistant Chief of Staff, G4 (Logistics), will also look to the engineer brigade for expertise and leadership on base camp master planning, Logistics Civil Augmentation Program (LOGCAP) contract interface, facility preparation work, and priorities for Class IV transport and issue.

One last area that the engineer brigade must take the lead on is improvised explosive device (IED) database tracking; predictive analysis; and tactics, techniques, and procedures (TTP) trend identification through coordination with explosive ordnance disposal (EOD) units, the Assistant Chief of Staff, G2 (Intelligence), the analysis and control element (ACE), and the BCT engineers. The brigade intelligence officer with All-Source Analysis System-Light capability in the EMAIN provides IED expertise throughout the division.

CP Operations

The basic layout of the engineer CPs must be structured to handle the full spectrum of combat operations. Our

crossing force headquarters configuration for the EMAIN facilitated the CP expansion for this deployment. Force modernization will include the usual problems of transitioning from analog to digital systems, coupled with the challenges of transitioning CPs from high-intensity conflict to SOSO missions. Information management is the key system for ensuring success by enabling the commander to “see himself.” Identifying the critical information requirements is essential to streamlining the wide variety of data that comes into a CP daily and then deciding what to do with it. One way to achieve this objective is to establish a common operational picture (COP) that aligns and synchronizes all four engineer CPs, especially for informing the division command group. It can include digital maps, but map images alone will not help the division engineer to influence the division fight. One invaluable option is the “brigade snapshot” (shown in the table on page 9). This one-page document enables the brigade commander and subordinate commanders to see themselves and to quickly outline problem areas. It drives the information management process, to include critical collection efforts. Coupled with the rolling battlefield update briefing slides and current missions on sector maps, the four engineer brigade CPs remain synchronized and focused with the same engineer COP.

Predeployment Training

Units will struggle with the mandatory Coalition Forces Land Component Command (CFLCC) and major command training requirements to be accomplished before deployment and those required during reception, staging, onward-movement, and integration (RSOI). Based on our experience in Baghdad, leaders should focus on the following “Big 8” areas of predeployment training for all engineer units:

Weapons Familiarization

Every soldier is a rifleman first. Help your soldiers become comfortable with their weapons. Go to the range as often as possible and practice reflexive fire techniques, both mounted and dismounted. Like it or not, engineers are performing a lot of infantry tasks in Iraq.

Convoy Live-Fire Training

Soldiers must be accustomed to firing their weapons while mounted. This should be practiced before entering the theater. Scenarios can include ambushes along obstructed routes, IED attacks, IED attacks followed by rocket-propelled grenade and small arms fire, attacks by single or multiple snipers, and mounted or dismounted suicide bombers. Each scenario contains a unique set of challenges and appropriate counterreactions.

Extra Crew-Served Weapons Gunner Qualification

There is always a shortage of qualified gunners for tactical movements and patrols. Double-qualify so you can

Unit	EN BDE, TAD	Date	28 Jun 03	Time	1323	Location		Iraq	Personnel Accountability		
Unit	TOC Grid	DNVT	Call Sign	Maintenance				Unit	Iraq	Kuwait	
493d EN GRP				Vehicle Type	Avail	O/H	OR%	Total Engineers			
94th EN BN				M113			83%	493d EN GRP			
389th EN BN				M9 ACE			87%	203d EN BN			
203d EN BN				M548			89%	94th EN BN			
671st MRBC				AVLB			81%	535 CSE			
1457th EN BN				MICLIC			100%	842d CSE			
16th EN BN (TOC)				SEE			73%	249th EN DET			
				D7			83%	389th EN BN			
40th EN BN				D9			88%	B/142d EN			
70th EN BN				Scrapers			89%	H33/B/141 SIG			
439th EN BN	Graders			86%	1457th EN BN						
2LCR RENG	Cranes			69%	759th EOD						
ETAC	Loaders (MW24C)			81%	18th EOD						
Last 24 Hours – Significant Events				Loaders (175B)			70%				
Unit	What	Where	When	20-Ton Dumps			85%	439th EN BN			
				5-Ton Dumps			91%	HHD EN BDE			
				BEB			83%	526th EN DET TT			
				Paver			0%	518th TT			
				Excavator			80%	526 SIG			
High-Visibility Priorities – 28 Jun				Fire Trucks			100%	671st MRBC			
Unit	What	% Complete	ECD	Fork Lift 10k			89%	Current FRAGOs			
493d	CJTF HQ Upgrades	65		Fork Lift 6k			100%	Division	Brigade		
493d	Camp Cropper Upgrade	15	TBD					240A	FRAGO 36		
40/493/1457	Zoo Opening Tasks	76		UXOs/Caches							
493d	LSA Dogwood	51	20 Jul	Total Engineer/EOD Effort 28 Jun 03							
493d	Police Station Upgrades	90	13 Jun	Unit	Reported Sites	Cleared Units	Cleared 3d ORD	Sites Pending 3d			
1457th	Police Station FP Upgrades	12			UXO/Cache	UXO/Cache	UXO/Cache	UXO/Cache			
1457th	BIAP FP Upgrades	75	9 Jul	1BCT	1/0	14/0	10/5				
493d	LSA Dogwood Footbridge	20	TBD	2BCT	1/0	3/0	0/2				
1457th	1BDE, 3ID ASR Clearance	Ongoing	TBD	3BCT	0/0	0/0	0/4				
493d	BIAP Master Planning	Ongoing	TBD	2-82d	0/0	8/0	2/0				
1457th	Tunnel Recons	84	TBD	2ACR	4/1	4/0	5/3				
40th/1457th	14th of July Bridge	Awaiting BOM	TBD	Other	0/0	0/0	0/2				
493d	Prefab Showers for FOBs	1	TBD	Total	6/1	29/0	17/16				
493d	PMP Replacement	5	31 Jun	Communication Status				Critical Class IV Status			
493d	LOGCAP Dining Facility	15		Unit	DNVT	SIPR	NIPR	FM	DSN	Concertina	6720
493d	Support to Camp Victory			493						Pickets	5661
493d	Civilian Airport Opening Tasks	10	15 Jul	1457						Hesco Bastions	1159
Today's Meetings				16E						Plywood	787
Who	What	Where	When	40E						2"x4" Wood	2428
Staff	Staff Update	EMAIN	0700	70E						4"x4" Wood	1046
CDR	501st COC		1000	439E						2"x6" Wood	2592
S3 DPW	Mayor Cell MTG	BIAP	1100	2LCR						Sandbags	378240
CDR	Radio Show		1130	EN BDE						Spike Chains	138 o/o
S3/CONSTR	Construction/Utilities	EMAIN	1400		TACSAT	FBCB2				NJ Barriers	3
CDR	1AD Conference Call	EMAIN	1700							Texas T-Walls	64
XO	USACE/V-Corps VTC	EMAIN	2000								

continue the mission while allowing the crew to rest. Include squad automatic weapons in this effort.

IED/Unexploded Ordnance

Ensure that every soldier has situational awareness, the ability to recognize a multitude of devices, an understanding of force protection measures, and the TTP for enemy employment.

Antiterrorism Training

The focus is on how to design secure forward operating bases. Engineers are expected to be the experts, but few have received any training on minimum standoff distances for various IEDs and how to effectively design and emplace protective measures against vehicle and suicide bomber attacks. Capitalize on the talents and resources of the Engineer Research and Development Center via TeleEngineering or other means, when appropriate.

Engineer and EOD Interaction

Clearly define the sapper role versus the EOD role for the various types of joint missions being performed in theater.

Use of Demolitions

Validate every sapper and engineer, regardless of military occupational specialty, on demolition procedures. They will definitely use them in Iraq. Include in this training the proper manner to safely destroy captured munitions without causing second-order hazards.

Physical Fitness

Emphasize upper-body strength and long-distance runs to provide the fitness needed to endure the heat and the tempo of operations.

Mission Success

The Big 8 will pay huge dividends for your unit as an enduring foundation for a year-long deployment. Additionally, leaders must oversee focused planning to establish systems within each engineer brigade CP and to complete required cross-leveling to handle daily requirements. Consider the following areas for ensuring mission success:

- Integration of EAD engineer units into the division (task-organized Active Component/Reserve Component assets) and mission planning for other EAD/EAC engineer assets conducting a short-term mission in the division sector.
- Use of division terrain teams in support of five BCTs (urban operation products) maximized.
- Role of the ADE in the division targeting effects process and operations and plans.
- Creation of a CMS (out of hide) for the EMAIN. This m u s t include battle-tracking techniques for contract construction and troop construction projects.

- Operation of the Class IV yard instead of leaving it to the DISCOM or main support battalion to run a division-level yard for force protection and construction materials.
- Maintenance support of construction equipment (beyond sapper unit modified table of organization and equipment [MTOE]) and special engineer equipment in the sapper battalions.
- Security, repair, and upgrade of existing infrastructure (water, power, sewer, airports, zoos, and bridges).
- Assured mobility through bridge replacement planning and main supply route upgrades.
- Predictive analysis of IED and UXO use by the enemy.
- Use of the ETAC on CPA/ CJTF-7/division priority project sites.
- Command and control of MK2 bridge boats for river patrols.
- Request for information and force request process to the next higher engineer headquarters.
- Use of the up-armored D9 and mine-clearing armor-protected (MCAP) D7 dozers (TTP).
- Use of casualty tracking/reporting (doctrinal use, as well as use of alternative channels).
- Use of EREAR manning versus rear area engineer responsibilities.
- Best utilization of an assigned engineer group headquarters.
- Use of the corps wheeled battalion across the division sector.
- Use of patrol and tactical road march briefs and operations.
- Reaction to contact (mounted and dismounted, direct/indirect/ambush).
- Knowledge of unit basic loads and vehicle movement load plans.
- Utilization of contracting/field ordering officer/Class A agent.
- Security plans of every operation with internal engineer assets.
- Use of engineer liaison element with the U.S. Army Corps of Engineers division, the CMOC, the CPA, and attached maneuver units (beyond the normal three BCTs).

Conclusion

The Engineer Regiment is fully engaged in the Iraq theater of operations. An example is shown in the photo on page 11. It depicts sappers from a Reserve Component EAD unit—the 1457th Engineer Battalion (Corps) (Wheeled), Utah Army National Guard, task-organized to the 1AD Engineer Brigade—working on a war-damaged suspension cable on the 14th of July Bridge, now called the Freedom Bridge. The repair design was done through



Sappers work on a war-damaged suspension cable on the 14th of July Bridge, now called the Freedom Bridge.

reachback capability to the U.S. Army Engineer Research and Development Center at Vicksburg, Mississippi, via the brigade TeleEngineering Toolkit, while the BCT sappers provided security and logistical support to the EAD unit operating in their BCT sector. Materials to repair the bridge were fabricated by soldiers from the 1457th, who have extensive military and civilian experience with such tasks. This is an important point to note as Reserve Component soldiers bring a wealth of expertise from their civilian professions and experiences. The heavy-gauge cable for the repair was obtained by the 1AD Engineer Brigade logistics officer through a local vendor. Initiative and re-sourcefulness by engineer leaders focused on logistics resources are paramount in missions of this nature.

The synchronization and resourcing of engineer operations from the sapper squad to the contracting support of infrastructure rebuilding in a division area of operations fall to the engineer brigade commander (or division engineer). The current engineer brigade MTOE and doctrine must be adapted for mission success in Iraq and future theaters of operation. Operation Desert Storm in Iraq, Operation Joint Endeavor in Bosnia, and Operation Iraqi Freedom clearly outline the need for, and added value of, having an engineer brigade organic to a heavy division. We must prepare our young engineer leaders for the challenge to make them flexible for future operations as our senior leaders on the ground. They are our future and are vital to ensuring that engineers remain as superb value-added to the combined arms team. Essayons!

Colonel Young serves as executive officer to the deputy commanding general of U.S. Army, Europe. He was the commander of the 1AD Engineer Brigade from July 2001 to July 2003. The brigade tripled in size with the addition of EAD/EAC engineer units following the transfer of authority with Engineer Brigade, 3d Infantry Division, in Baghdad in May 2003. A April-June 2004

(“Force Design Concepts,” continued from page 6.)

Training the Battle Staffs

It was essential to train Task Force Able’s battle staffs to accommodate dynamic task organization to ensure that the EMTs were properly integrated and resourced. This required extensive training, and the task force developed an in-theater program—executed concurrently with combat operations—to train them. After-action reviews that focused on the application of EMF principles were essential. Units that train for a traditional, pretransformational, echelons-above-corps role were most challenged in retooling their battle staffs. However, all units made the transition.

Ensuring Cohesive Senior Leadership

Leadership at the task force and battalion levels was essential to the successful implementation of EMF concepts and the success of Task Force Able. Battalion leaders had to stop thinking in terms of “their” units, assume a broader task force identity, and become dedicated to ensuring that uniformly high Task Force Able standards were applied. All soldiers and junior leaders required coaching, counseling, and mentoring. It was a challenge to maintain unit identity, ensure that administrative actions were accomplished, and foster critical home station threads such as family readiness groups. Yet, a great result of employing EMF concepts was a more cohesive senior leadership that was extremely familiar with the breadth of task force operations.

Conclusion

As the Army moves to greater modular forces, the Engineer Regiment should not wait for radical changes in its current echelon-above-division and echelon-above-corps force structure to align itself with emerging concepts. As shown in recent combat operations, engineer soldiers and leaders are equal to the challenge. Engineer organizations, once liberated from traditional employment concepts, can embrace transformational concepts and embark on the road to more modular, agile, and responsive forces.



Colonel Toomey commands the 555th Engineer Group at Fort Lewis, Washington. He is a graduate of the U.S. Military Academy, the Naval War College, and MIT. He has had numerous command and staff assignments, to include Commander, 14th Engineer Battalion, Fort Lewis, Washington.

Endnotes

¹ *Unit of Employment (UE) Operations White Paper, Training and Doctrine Command Analysis Center (TRAC), 23 January 2004, p. 39.*

² *Ibid, p. 12.*

³ *Lieutenant Colonel Bryan Watson, Future Engineer Force Brief, U.S. Army Engineer School, Fort Leonard Wood, Missouri, 27 February 2004.*