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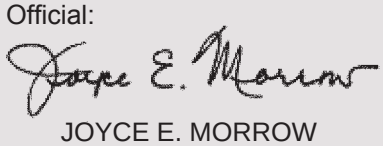

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Back Cover: 2008 Best Sapper Competition

DEPARTMENTS

FEATURES

Clear The Way

By Brigadier General Gregg F. Martin
Commandant, United States Army Engineer School

Teammates: Greetings from Fort Leonard Wood, the home of our magnificent Army Engineer Regiment! While our Regiment is decisively engaged in simultaneous full-spectrum operations across the globe, we have embarked on a significant journey into the human dimension, which will have far-reaching, enduring, and strategic effects on our Regiment and Army. Launching this journey was the principle focus of ENFORCE 2008, which we recently held from 4-9 May in St. Louis and at Fort Leonard Wood.

As in the past, the purpose of ENFORCE was to—

- Build the future of our Regiment.
- Enhance learning and professional development.
- Promote fellowship and esprit de corps.
- Celebrate our achievements, traditions, and history.
- Connect senior leaders, junior leaders, alumni, and Family into the regimental "circle of life."

On top of all the learning and hard intellectual work, we had a great time of celebration, fellowship, competition, and remembrance. Highlights included—

- World-Class Speakers, who stretched our brains, challenged our conventional thinking, and informed us.
- Interaction with our world-class Industry Partners, who support and enable us with materiel and technology solutions and support.
- Breakout Sessions with key leaders from around the world who came back to inform and educate us on the Stability Operations they are currently engaged in and responsible for.
- Regimental Spirit Run, with plenty of pushups and flutter kicks.
- Best Sapper Competition and awards (see article, page 31).
- Commandant's Reception and Mega-Mixer, which pulled together senior leaders, junior leaders, alumni, and Family in a wonderful social event.
- Tours of the world-class Counter Explosive Hazards Center and Military Construction (MILCON) Projects.
- Chief of Engineers State of the Regiment Address (see article, page 6).
- Prayer Breakfast in the World War II chapel.
- Remembrance Service, in honor of the 37 heroic fallen Sappers who made the ultimate sacrifice since the last Roll Call a year ago (see article, page 26).
- Regimental Ball, a "Circle of Life" event, at which we presented the Regimental Awards for Excellence: Itschner Awards, Sturgis Medals, Best Platoon Leader Awards, and Van Autreve Award (see article on page 27 for detailed recognition of these Soldiers and units), as well as the Gold DeFleury Medal to LTG (Ret) Robert Flowers, and the Essayons Award to his wife Lynda.
- Spouse Program, consisting of a diverse array of important, interesting, and enjoyable events throughout the week.

Of special note was the Regimental Change of Responsibility between CSM Clint Pearson and CSM Robert Wells (see article, page 5). We thank CSM Pearson and Mollie for their four-plus years of dedicated service to our Regiment in this key leadership role. We wish them all the best as they are reassigned to Washington, DC, where they will continue to do important work for our Army. And we welcome CSM Wells and Ann—the perfect team to help lead our Regiment into the future and to the next level.

Thanks to everyone who came to ENFORCE 2008 and participated, and to everyone who played a role in planning, supporting, orchestrating, and executing this outstanding and successful event. Please get the word out and take the message of Building Great Engineers to the streets!!!

For those of you who could not attend, I ask you to read the forthcoming reports, get engaged in the Campaign Plan, and help us Build Great Engineers for full spectrum operations in an era of persistent conflict.

For all of you who are deployed around the world, performing full spectrum operations on behalf of our great nation—THANK YOU! You are doing incredible work of tremendous importance and are making an enormous positive difference! Keep at it, keep the faith, stay safe and healthy, and know that you are in our thoughts and prayers. You have the complete and total support of the entire Regiment!

May the Good Lord bless each of you and your Families! All the best!

ESSAYONS!!! Army Strong!!!

Mark your calendars now for ENFORCE 2009, the week of 19-25 April 2009, at our Regimental Home – Fort Leonard Wood!!!

Lead The Way

By Command Sergeant Major Robert J. Wells
United States Army Engineer School

I'd like to take this opportunity to thank all the great Soldiers, past and present, who have helped me get to where I am today. Working and fighting alongside our brothers in maneuver, fires, intel, and sustainment units has given me an appreciation of the challenges we face on today's battlefield and emphasized the importance of the engineer role.

My focus has always been on the mission, the Soldier, and the commander. As a noncommissioned officer (NCO), I believe we're the conduit that turns the commander's vision into reality. Mission command is more than just a doctrinal term you spout when nothing else comes to mind. No commander can be everywhere on the battlefield at all times. But wherever you find Soldiers, you're sure to find an NCO, and the commander has placed his trust and confidence in us and the junior officers to execute the missions within his intent. There are no better Soldiers on the battlefield, who know how to execute the wide variety of tasks required in a counterinsurgency (COIN), than today's young NCOs and officers. I have devoted myself to doing everything in my power to make them successful.

There are certain skills (beyond the basic combat skills) in which every Soldier should be proficient in today's COIN environment, regardless of their rank, branch, or expertise. Those skill sets are—

- Negotiations
- Cultural Understanding
- Language
- Counter-IED, Counter-Sniper
- Economy of Force (EOF), Rules of Engagement (ROE)
- Search, Detain, Prosecute
- Tactical Questioning
- Every Soldier a Sensor and Ambassador

We've been at this fight for almost seven years, yet our Soldiers are still having a hard time using the Army's basic commands in Arabic, Dari, or Pashtun. The Iraqi Security Force (ISF) and Afghan Security Force (ANSF) are taking the lead more and more each day. Our interaction with them and the civilian population grows exponentially just before we hand off each traffic control point (TCP), joint security station (JSS), or police station to the ISF/ANSF.

The lieutenant isn't the only Soldier in the platoon that uses the interpreter. Building a good rapport with your "terp" and setting down some ground rules for negotiations or key leader engagements are always good practices. I believe there are some baseline standards to operating on the battlefield. Everyone in the patrol should know their part in the 5, 25, and 200 Drill. Standing on the shoulder of the road (where the IEDs are normally placed) and waiting for your sergeant to tell you where to go is not a healthy practice. Counter-sniper drills must be well-thought out and rehearsed inside the combat outpost (COP). I can tell you that "SniperBoy" doesn't like us to be alongside or behind him, nor does he like us to use available cover.

When in doubt, don't shoot. You don't want an Iraqi or Afghan father to walk up to your platoon leader or platoon sergeant and say, "You killed my son." Positive identification (PID) is just that, and quickly recognizing a threat is another drill that can be taught while we're back in the rear training for the next deployment.

Identify the "bully" in the platoon after a catastrophic event. He's the one who can't wait to get back outside the wire and indiscriminately make things right. Finding the right bad guy is usually a long and tedious intel-driven process, but well worth the effort. It'll prevent the creation of new enemies and will bring the civilian population over to our side.

To be a good sensor, a Soldier must recognize normal activity. We can start by using a long-practiced Cavalry Scout technique of maintaining a journal. We should document who lives across the road from our COP, what vehicles they use to travel, daily habits and routines, vehicle or dismounted traffic. It'll build a great picture for the Soldier of what normal activity looks like, and then those odd vehicles, people, or events will stand out from the daily routine. We're under observation as soon as we leave the wire, why not them?

Proficiency in these skills is as important as our technical expertise. These competencies get us from the COP/forward operations base (FOB)/JSS to the objective and carry us through the completion of our mission.

With the large turnover of Soldiers after a deployment, and the build-up of the formation for the next deployment, a lot of hard lessons are lost. We can set our units up for success if we solidify the unit tactical standing operating procedures (TACSOP) before R+90 and the team PCSs to the four winds. At least the new guys will know what right looks like. They can take it from there.

It's a great time to be a Soldier, and especially an engineer. "Praise the Lord, now pass the bullets."

Lead The Way

By Command Sergeant Major Clinton J. Pearson
United States Army Engineer School

Greetings Sappers! I hope and pray that all has been well with our Soldiers, Families, and Civilians who have given so much to our Regiment, our Army, and our nation. This is my final article as your Regimental Command Sergeant Major. I am extremely grateful for your support, sacrifices, and accomplishments.

I am truly blessed for the opportunity to serve our nation and Regiment while our military is at war. Everything we have done makes me proud to be an American—proud to live in a nation that is obliging for good in the world and values human life; where we "hold these truths to be self-evident: that all men are created equal, and that they are endowed by their creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness." I'm so thankful that we have men and women who are willing to answer the call to protect our way of life; many have paid the ultimate sacrifice for the liberty and freedom we enjoy every day. These God-gifted men and women are willing to step out of America's sandbox to help give liberty and freedom to oppressed people in other nations. Today, we continue to stand on the shoulders of these giants, continuing our efforts to provide peace and stability around the world. I will forever keep each of you in my daily thoughts and prayers. To the Families that have lost loved ones in past or present conflicts, you will remain our nation's greatest treasures.

I would like to highlight a few of the many accomplishments we have made over the past four and a half years that fall into the T3 areas of *Taking Care*, *Transforming*, and *Training*. Let's first address *Taking Care*, specifically regarding engineer senior enlisted promotions. I am proud of our Regiment in this area because we set many records, especially during the most recent E7-E9 promotion boards. Here are some statistics:

- 51 master sergeants were selected for sergeant major (the largest E9 selection rate engineers have had in decades).
- 191 sergeants first class were selected for master sergeant.
- 352 staff sergeants were selected for sergeant first class.

We also set records regarding *Transforming* and *Training*. Our Army has undergone the most rigorous transformation in history, while engaged in the War on Terrorism. Our Regiment has also undergone a significant transformation from IET, AIT, EOBC, NCOES, to the structure of battalions, brigades, companies, sections, and teams that support the combatant commander to the embedded engineers in the HBCT. We must continue to strive to provide them with the necessary skills and tools to enable the combatant commander to ensure mobility in concert with maneuver.

To assist us in this endeavor, the Engineer School has implemented several functional courses that provide our Soldiers and leaders with the skills and tools that have proven to be force multipliers, including the following:

- Combat Search Operations Course
- Route Reconnaissance/Clearance Operations Course (R2C2)
- Route Reconnaissance/ Clearance Operations Course – Sapper (R2C2-S)
- Route Reconnaissance/Clearance Operations – Maintainer (R2C2-M) Course
- Area Clearance Course
- Improvised Explosive Device Defeat – Train the Trainer (IEDD-T3) Course
- Dog Detachments/SSD
- Improvised Explosive Device Defeat – Train the Trainer (IEDD-T3) Mobile Training Team (MTT) Course.

Two other important courses are the joint Urban Mobility Breaching Course (UMBC) at Camp Lejeune, North Carolina, which has greatly improved the Sappers' ability to fight and win in an urban environment; and the Explosive Ordnance Clearance Agent (EOCA) Course at Fort Leonard Wood, which provides basic skills and knowledge required to perform as EOCA. All these courses are relevant to the current and future fight and provide our Soldiers with the tools and skill sets needed to succeed.

Regarding NCOES, we realize that we cannot completely give up our technical skills for combat skills. Therefore, we are currently relooking the NCO technical competency skill sets. In the meantime, however, I ask the leadership to continue to allow NCOs to attend the Basic Noncommissioned Officer Course (BNCOC) and the Advanced Noncommissioned Officer Course (ANCOC). Both are extremely important to the career progression of NCOs and greatly enhance their ability to perform their wartime mission.

I also ask you to continue to support another area that is near and dear to my heart—the Engineer Regiment's annual Best Sapper Competition. This event was created three years ago and grows stronger every year. We continue to see more and more participants and obtain more and more support. It is an amazing and inspiring competition that shows our engineers knee-deep in action!

In closing, I'd like to welcome back those Soldiers who have recently returned from a deployment. And to those who have recently departed, I wish a safe and speedy return home. God bless you and the fallen comrades and their Families. We will never forget you. Finally, I again would like to thank each of you for your support, dedication, selfless service, professionalism, tremendous efforts, and inspiration during the past four and a half years. It has been an amazing once-in-a-lifetime opportunity to serve as your Engineer Regimental Command Sergeant Major. I salute each of you and wish you Godspeed. Essayons!!! Sapper Strong!!! Army Strong!!!

REGIMENTAL CHANGE OF RESPONSIBILITY

On 8 May, the spotlight of ENFORCE 2008 was on the Regimental Change of Responsibility ceremony, not only to celebrate the great event and the great people involved but also to highlight the crucial role and responsibility of our senior noncommissioned officers (NCOs).

Command Sergeant Major (CSM) Clinton J. Pearson and his wife Mollie were honored and thanked for their service to our Regiment in this key leadership role, and the saber was passed to CSM Robert J. Wells and his wife Ann, as they assumed responsibility.

Outgoing Regimental CSM Clinton Pearson, Engineer School Commandant BG Gregg Martin, and new Regimental CSM Robert Wells

CSM Wells has a remarkable background—highly decorated with two combat tours; Airborne, Ranger, Air Assault, and Sapper; Drill Sergeant; Exchange NCO with the Australian Army; and he has excelled in every leadership position from squad leader to CSM. A great engineer, he has distinguished himself most recently as a combined arms, full spectrum warrior as CSM of the 1st Brigade Combat Team (BCT), 4th Infantry Division, in Iraq and CSM of the Operations Group at the National Training Center, Fort Irwin, California. CSM Wells is clearly the right person in the right seat of our Regimental Bus, as we make the journey to Building Great Engineers for full spectrum operations in an era of persistent conflict.

CSM Wells entered the military at Columbus, Ohio, on 15 January 1980. After basic and advanced individual training (AIT), he completed airborne training with the 43d Airborne Company and was then assigned to the 82d Airborne Division, with primary duties as an M60 machine gunner. In 1984, he was assigned to the 5th Infantry Division at Fort Polk, Louisiana, as a combat engineer squad leader. He was promoted to staff sergeant (SSG) and was a platoon sergeant until his reenlistment to the Federal Republic of Germany and the 130th Engineer Brigade in 1986. There, he was a squad leader with Alpha Company, 317th Engineer Battalion, until his selection for drill sergeant duties at Fort Leonard Wood, Missouri, in 1989. While serving two years on "the trail," he was promoted to sergeant first class (SFC) and worked briefly at the Drill Sergeant School, until his reassignment to the 65th Engineer Battalion at Schofield Barracks, Hawaii, in 1992. While at Schofield Barracks, he was a platoon sergeant with Alpha Company, battalion operations sergeant, and first sergeant (1SG) for Bravo Company, 65th Engineer Battalion.

In 1996, he was transferred to the 101st Airborne Division at Fort Campbell, Kentucky, where he was 1SG for Headquarters and Headquarters Company, then Bravo Company, 326th Engineer Battalion, until 1999. He was then selected to be the Regiment's Combat Engineer Exchange NCO, with duties in Sydney, Australia. While in Australia, he was promoted to sergeant major (SGM) and was transferred to Canungra, Queensland, to teach at Australia's Regional Training Center.

In 2001, he was promoted to CSM and assigned to the 4th Infantry Division and the 299th Engineer Battalion at Fort Hood, Texas, where he deployed with the 299th to Operation Iraqi Freedom I, Tikrit, Iraq. The 299th took part as the screening element on Operation Red Dawn that resulted in the capture of Saddam Hussein on 13 December 2003. Upon redeployment from Iraq, he was selected to be CSM of the 1st Brigade, 4th Infantry Division, and helped the brigade transform to the new unit of action and become 1st BCT, 4th Infantry Division. The BCT deployed to Operation Iraqi Freedom 05-07 in December 2005 and operated around Taji, Iraq, until its return to Fort Hood in December 2006. He later became the Operations Group CSM at the National Training Center.

CSM Wells' military schools include all phases of the Noncommissioned Officer Education System (NCOES), Ranger School, Sapper Leader Course, Drill Sergeant School, and Airborne and Air Assault Schools.

He has been awarded the Legion of Merit, Bronze Star (2), the Purple Heart, and the Combat Action Badge and is a recipient of the Engineer Regiment's Bronze de Fleury Medal. He is also a Legionnaire in the Order of Saint Maurice, a Noble Patron of Armor in the Order of Saint George, and a member of the Honorable Order of Saint Barbara.

CSM Wells is married to the former Elizabeth Ann Haywood of Cambridge, Ohio. They have one daughter, Audrey, who lives in California.

State of the Regiment Going From Good to Great

By Ms. Shirley A. Bridges

When Lieutenant General Robert L. Van Antwerp spoke to ENFORCE attendees in 2007, he had been the 52d Chief of Engineers for less than a week, and he focused more on the future of the Regiment than its current state. But when he addressed ENFORCE 2008 attendees on 8 May 2008, he had had a year to assess the Regiment, and he spoke about where he thinks it is now and about some of the opportunities it has to go from good to great.

"What a privilege it is to be an engineer," he said. "I want to talk to you about our Regiment today. I'm going to give you a sense of where I think we are."

He spoke of a book by Rick Warren called *The Purpose Driven Life*, in which Warren talks about metaphors—particularly a life metaphor. Unlike a simile, which would be *"your life is like. . .,"* a metaphor would be *"your life is...."* Warren suggests that—

- Life is a test.
- Life is a trust.
- Life is a temporary assignment.

LTG Van Antwerp said, "I think that was written for military people." He explained that statement by saying, "We're all going to be *tested*; we're being tested right now as a Regiment like never before." He continued, "There's a certain *trust* that we have that you only give to people in this profession. We're a profession within a profession. The military is a profession, but the Engineer Regiment is a profession within that profession." He said, "Then, there's the *temporary* nature of our assignment. In one sense, the spiritual sense, you won't live forever, and then it will be eternity. And in our case, it's the 20 or more moves we make during our career. But what wonderful things we've seen during those temporary assignments."

LTG Van Antwerp suggested another metaphor for life, and that is that it's a race. Or, more specifically, a relay race. He said that he looks out into the audience and sees all parts of the relay, and he thinks about what his part is. In a relay race, "You start with a baton, and hopefully all your team members are world class. The first runner runs his leg, and there's a stretch on the track where he has to make the handoff. He can't make it before that, and he can't make it after, or he hasn't run the race to win. He'll be disqualified. In a relay race, you have to run the race to win, but you also have to run it within the rules." He added, "Another part that has to happen is that, hopefully, you will finish well on your leg of the race. As you come to the person you have to hand off to, he has to be going at full speed when you make the handoff. That's where you can drop the ball." He said that when he thinks of the youth, and those of us who are older and experienced, we have to be sure we make the handoff.

"Life is a race. Life is a relay race." He said that if you look at the track today, it's a slippery track—a rainy track. And one reason is that there's a lot of competition for resources. He gave a couple of examples:

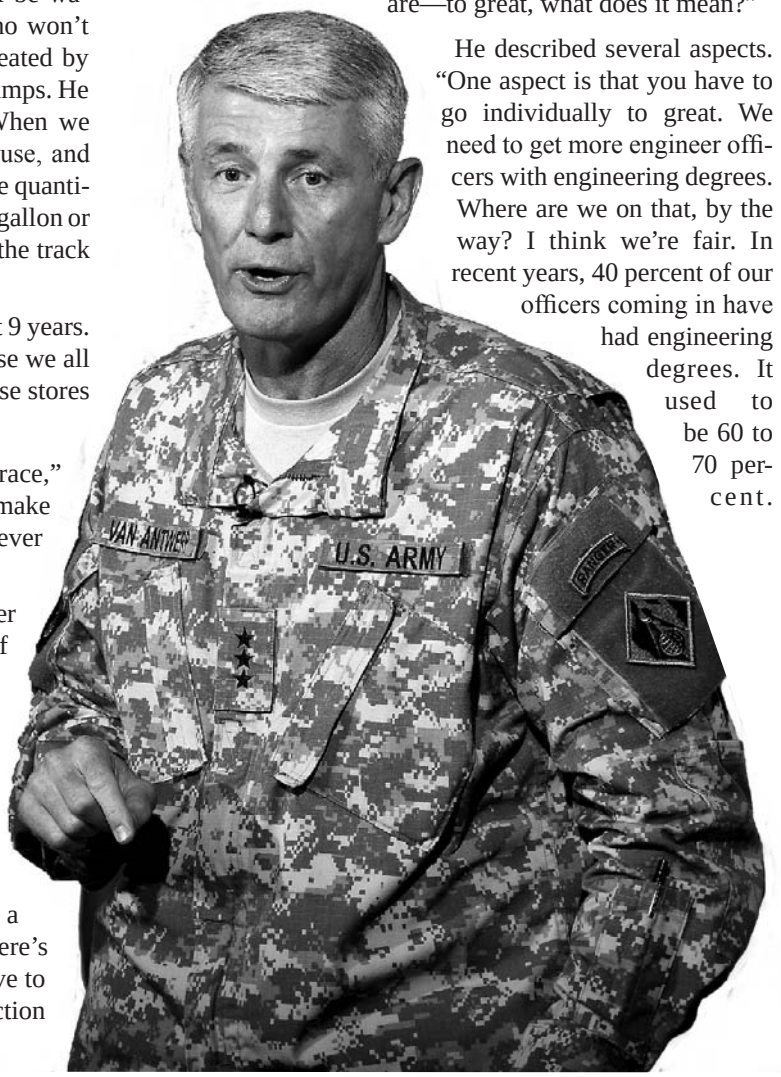
- By 2015, 40 percent of the world's nations will be water stressed. At some point, there are people who won't have drinking water. There's a lot of tension created by that in the world, and a lot of tension at the fuel pumps. He said he thinks about that for the Regiment. "When we think about fuel efficiency and the vehicles we use, and the armored vehicles that we've never had in these quantities before, what happens when fuel goes to $10 a gallon or $20 a gallon? Can it go there? I don't know, but the track is slippery and wet."
- The cost of food has gone up 45 percent in the last 9 years. There's so much pressure on food stores—because we all want to be energy independent—that some of these stores are being converted to biofuels.

"That's the context in which we're running this race," he said. "But on the other side, there are plusses that make this a special time—a time of opportunity like never before." Some of the opportunities he sees are—

- The Army's budget is greater this year than it has ever been in the history of the U.S. Army. About half of it is supplemental, and the other half is base. The base is twice as big as it was in 1995, but the force is smaller. Because of that, we should make sure that what we have is the best.
- The Army is restationing, and we have one chance to get it right. We also have a lot of changes due to the Base Realignment and Closure (BRAC) Commission—and we have a deadline to be done with that by 2011. There's another deadline in our civil works in that we have to have New Orleans to a 100-year hurricane-protection level by 2011.
- The Army will grow by another 100,000 people. That number includes 10,000 more engineer Soldiers in the next 3 or 4 years. The Chief of Staff of the Army, General George W. Casey Jr., has said that the Army is now at 1 million and that it will grow by another 100,000, and that is it. He has told us to get him the best Army we can within 1.1 million.
- We have some of the best classrooms in the world—not just classrooms in the usual sense, but classrooms called *projects*, where you can go to school and you can build a competency that we've never built before.

"That's the track," he said. "Part of it is slippery and rainy, and part of it is full of opportunities like we may never know again."

"So what do we do about it, and where are we?" he asked. "If we have a scale that goes from *poor – fair – good – very good – great*, where are we now? What do you measure it against? You have to have a measuring stick. You can't just say 'it's fair' or 'it's very good.' We have to have a measuring stick. What does it mean for us to go to great? If we're going to go from where we are—from wherever you think we are—to great, what does it mean?"



He described several aspects. "One aspect is that you have to go individually to great. We need to get more engineer officers with engineering degrees. Where are we on that, by the way? I think we're fair. In recent years, 40 percent of our officers coming in have had engineering degrees. It used to be 60 to 70 percent.

Where would you rank that? We have a team assembled now to try to figure out the right percentage of engineers for the profession."

"You have to go to school," he continued. "It starts here with the Basic Officer Leader Course (BOLC), and it continues your whole lifetime through. You need to get boned up on our profession and take it upon yourself to become personally educated. That's your responsibility. The Engineer School will help, but we're not going to do it for you."

"You have to face reality, which is what we're doing now in the Regiment. How do we recruit the force we need for the future?"

He also said that we can go to great as a unit—a small unit, a squad, a buddy team, and as a Regiment. "It builds," he said, "but it starts with greatness of individuals. So where are we? I would say that right now, the Regiment is good. But I think we have an opportunity to go to great."

LTG Van Antwerp listed four things that he uses as measurements:

You have to deliver superior performance in all you do. He said that this is important whether you're in construction, doing permits, in a sapper squad, or in a unit building a forward operating base (FOB). In military programs, you have to deliver on time—or better yet, ahead of time. And you also need to do it within cost, and get the full scope of the contract. Innovative use of contractors could possibly get up to 15 percent cost savings and 30 percent time savings.

You have to set the standards for your profession. He believes that you'll know when you get there, because people will ask you to tell them what to do. They will steal ideas from you shamelessly and will want to benchmark on you. How do people evaluate us? Do they come to us and say that we set the professional standards? During Katrina, we reached out and tapped the world for answers and found that the Dutch build 10,000-year levees. "But we want people tapping us and saying that we're the experts. I think we're good here, but we can go to great."

You have to do something distinctly (positively) unique for your nation and other nations. He said that a lot of people would say that the Corps is known for something unique in New Orleans, but it wouldn't be in a positive unique sense. We used to build levees in such a way that they only offered 100-year protection, but now they're built like dams, which offer about a 10,000-year protection. And in the Gulf Region Division, we built more than 1,000 schools that held 400,000 students. Not all are occupied, and some don't have teachers. And if the local people don't buy in where we build, and there is no one to watch over the schools, the doors and windows and copper wire will disappear, and we'll have to start over. I give us a very good here, but parts of the handoff need to go to great.

You have to be built to last. "You are built to last when you can look out 10 to15 years and the force is there." So—to use the metaphor of the relay race—you have to have younger people coming on to hand off to.

He mentioned two books that engineers should read for their professional growth, both written by Jim Collins. One of them is *Good to Great*. LTG Van Antwerp said that he knows Collins, and he asked him if he'd ever used an example of a government organization like the Corps in his studies. Collins said, "You go from good to great, and we'll write about it. You start taking notes, and if you get there we'll know it when we see it." The other book is *Built to Last*. "That's where we want to go," said LTG Van Antwerp. "I think we're good, but we have an opportunity to go to great."

He told a story about how in 1995, a new police commissioner took over the New York City Police Department at a time when the city had the highest crime rate of any big city in the country. After assessing what was going on there, the new commissioner put a note on the bulletin board that read, "We're not a team of report takers; we're the police force." With that, he began to change the thinking of the department from "input" to "output." He discovered that 75 percent of all police commissioners got fired because, when their performance was evaluated, the question they were asked was "What happened to the felony crime rate in your place?" Most of those who got fired had been focused on things like how many arrests were made, the number of reports written, and the number of cases closed. LTG Van Antwerp said that the commissioner did something that you're going to have to do if you're going to go to great. He put an audacious goal on the New York City Police Department: He said that he expected to have a double-digit decrease in felonies. So he developed a plan, and they made it—and he's still there.

LTG Van Antwerp said that we need to think "What would be the output so that we'd know we were delivering superior performance? We have a lot of missions to deliver. So what is the output, and how do we know if we're great or not?"

He described the following scenario: *The strategy for brigade combat teams (BCTs) now is to go in and build small patrol bases or small forward operating bases (FOBs). But that hasn't always been the case. With the old strategy, we tried to gather human intelligence (HUMINT) from the Iraqis as we patrolled during the day. But they wouldn't tell us anything because they knew that we would be going back to our FOBs at night, and they'd be left there. They knew that they were being watched to see who they talked to. The new strategy is to get out in patrol bases or small FOBs right in the middle of the main streets, and at night we stay there.*

So if you're a young captain, and the BCT commander says, "You see these five buildings here? I know they look decrepit, and they're not what we're used to. But that's my BCT headquarters, captain. You're my engineer. I want you to figure out what the electric generating requirements are to run that. We have to have lights, we'll want showers, you'll need to provide security and lay in the communications . . . I want to have the whole geospatial picture here."

"What if you as a captain didn't study engineering, or you didn't learn how to do these things in your basic and career courses? You are in a professional dilemma." He suggests that the way to get the experience and knowledge in our people so they can do what we're asking them to do is to first make sure that they're in the right job and then train and educate them.

So what is the framework to get all of this? How do we do it? He suggests that the framework in *Good to Great* is a good one to use.

You have to have disciplined people. You have to have disciplined personnel, and you have to have disciplined leaders. And what do these leaders need to be like? The book shows a chart with leaders at Levels 1 through 5. There are two compelling traits of Level 5 leaders:

– *Be personally humble.* One definition of humble is "when your competency is properly placed"—God first, and then other people (your leaders). Another definition is that you don't need to think less about yourself, but think about yourself less.

– *Have a professional will or ambition for the business (not for yourself).* You have to resolve to do whatever is necessary to make the company great. You have to get your people in the right seat of the bus, after first making sure they're on the right bus. Don't hire someone if you're not convinced that that person is the right one for the job. And if you think you need to make personnel changes, do it now. You have to do that to go to great. In addition, if you have a problem in your organization, don't put your best people there. Put them on your biggest opportunities.

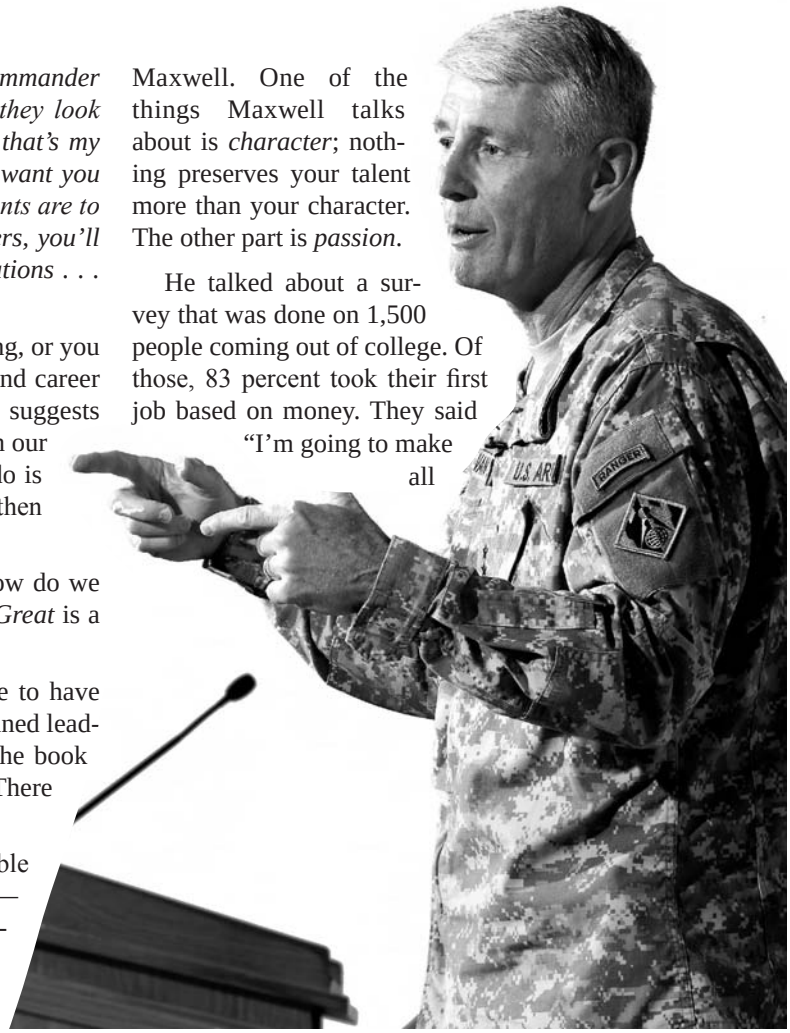
You have to put disciplined thought into it.

– *Determine your "Hedgehog Concept."* This involves focusing your efforts on what you do best. "You can't do a million things and do them well, so focus your actions along your mission."

– *Confront the brutal facts.* "You have to face reality, which is what we're doing now in the Regiment. How do we recruit the force we need for the future?"

You have to have disciplined action. You have to have self-disciplined people to have disciplined action. They must be able to stay focused on the mission and not be swayed by deterrents.

Another book that LTG Van Antwerp recommended for engineers to read is *Talent Is Never Enough* by John Maxwell. One of the things Maxwell talks about is *character*; nothing preserves your talent more than your character. The other part is *passion*.



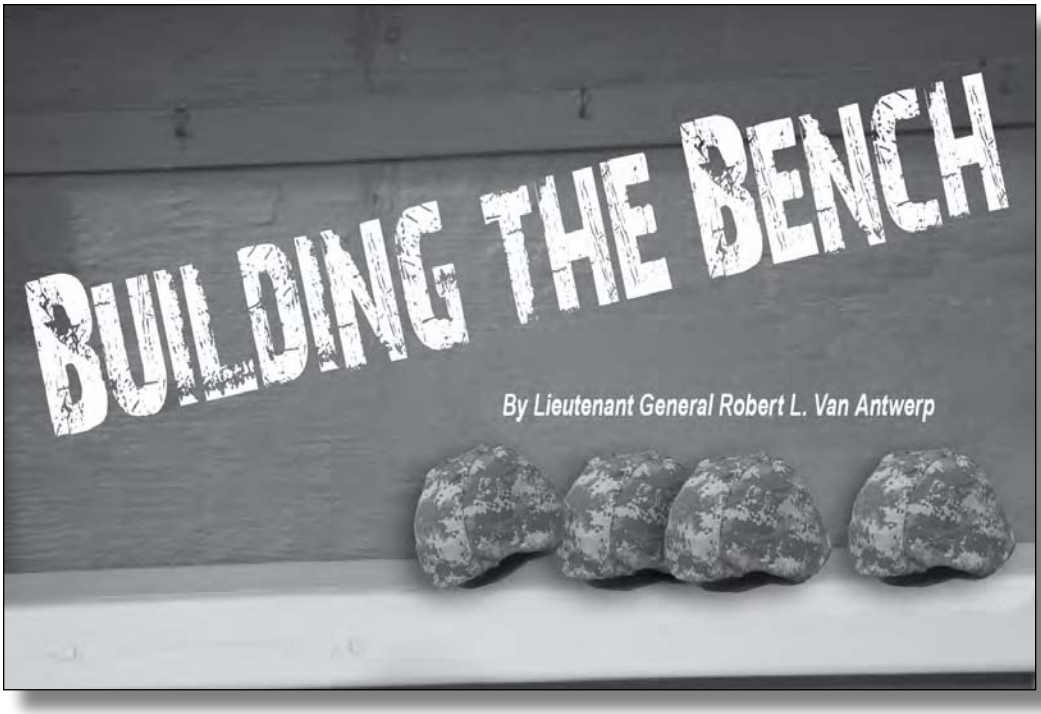
He talked about a survey that was done on 1,500 people coming out of college. Of those, 83 percent took their first job based on money. They said "I'm going to make all the money I need, and then I'll go do what I really love to do." The other 17 percent said, "I'm going to take that first job and do what I'm passionate about, what I love to do, and I'll let the chips fall where they may." They tracked the group to see how many millionaires there were after 20 years, and they determined that there were 101 millionaires out of the group of 1,500. Of those 101 millionaires, 100 were from the 17 percent group—the passionate group.

"If you don't have passion," he said, "you need to find another seat on the bus."

LTG Van Antwerp ended his address with "I say to you as a young person—or as an older person. I am passionate. I love what I do. I love what we do. And we have such an opportunity like never before. We can build our competency so we can go to great. But you have to have passion. If you don't, we need to find a different seat for you. As a Regiment, we're good, but we have an opportunity to go to great."

"Thank you all for all you do. Sappers lead the way. God bless you, this Regiment, and God bless America."

Ms. Bridges is the managing editor of the Engineer Professional Bulletin. She has been a member of the bulletin staff for the past 13 years, either as editor or managing editor.



When do you transform the Army? When you are at war and have the resources and real-world classrooms to test things.

When do you build the bench and needed competencies in the Engineer Regiment? When you have the largest workload since World War II (maybe in our history) and the resources and real-world classrooms to train the next generation and test things.

To move from good to great (delivering superior performance in all missions; setting the standards for our profession; having a unique, positive impact on our nation and other nations; and building a Regiment to last), we need Level 5 leaders[1] (those who put the organization's success above their personal success) and the right people, disciplined people, on the Regiment's bus and in the right seat on the bus.

We need to be "Army Strong" at all levels, from entry level to the most experienced, with a good balance of diversity—age, ethnicity, gender, and education. We need leaders in their field, certified as professional engineers and project management professionals, and licensed to professionally practice their craft.

Here is the context in which we work:

- Largest workload.
- Aging infrastructure.
- Aging workforce, with thousands of baby boomers eligible to retire in the coming years.
- A shortage of college graduates with degrees in science, technology, engineering, and math.
- Other countries, such as China and India, are graduating *three to five* times as many engineers per capita as we are in the United States.

Many of you have heard me talk about the walnuts and rice jar, walnuts being the big priorities.[2] Well, improving our technical competency is a walnut. Our increased workload gives us a limited window of time—three to four years—to turn the trends around and build the force. See *Built to Last*, another book by Jim Collins.[3]

We have already begun a number of initiatives. We recently held a National Technical Competency Workshop at Headquarters, USACE, in which representatives from academia, private industry, contract partners, customers, and professional societies, as well as teammates from each division and senior leaders from headquarters, tackled the major challenges we face on this issue. It was also the focus at this year's ENFORCE at Fort Leonard Wood, Missouri, in May.

Some of the initiatives we're considering address training and equipping our current workforce; recruiting at the national, regional, and local levels; and motivating students to study math and science.

Regarding the current workforce, we want to ensure that the Regiment's employees are challenged and growing the skills they have by giving them the right amount of technical work. We also want to help our teammates achieve the technical certification in their career field. We'll be considering a "beefed-up" training-with-industry program and looking for opportunities to bring the trainers into the Regiment. That may include more frequent use of virtual training programs, where appropriate.

We could use a more structured mentoring plan to make sure our employees are getting the guidance, support, and training they need throughout their career life cycle. I hope to foster an environment where the staff is part of a lifetime of learning and teaching. And we need to be diligent with exit interviews—when our teammates leave the organization, gather that anecdotal information about how to better retain our quality staff members.

Looking to the future, we have to become the employer of choice for new graduates, or even for established professionals who are looking for that midterm career change. We have

(continued on page 19)

ENFORCE 2008–
BUILDING GREAT ENGINEERS

By Brigadier General Gregg F. Martin

For ENFORCE 2008, we chose to focus on the human dimension because, in the words of our Chief of Engineers, Lieutenant General Robert L. Van Antwerp, "It's ALL about PEOPLE!" Soldiers, noncommissioned officers (NCOs), warrant officers, officers, civilians, and Families—they are the heart, soul, brains, and essence of all that we are and do as a Regiment, and they are what unites the entire Regiment into the incredible team that we are.

Since 9/11, the Regiment has played an increasingly critical role for our Army, joint force, and nation, as we operate across the full spectrum of operations around the globe. From the tactical to strategic levels, and from environments ranging from stable peace to war, engineers have been crucial. One of the key observations and lessons learned during this period is that full spectrum operations have driven up the requirements for engineer effects and have revealed a capability gap in terms of engineer force structure, organizations, and individual technical competency. While we continue to build the modular engineer force and work to improve force structure deficiencies, we chose to focus on the people part of Building Great Engineers at ENFORCE, because people are by far the most important element; and investment in people also offers the greatest long-term payoff for our Regiment and Army.

So what kind of people do we want, and for what purpose?

The Regiment needs people of great character and values, who are fit, tough, smart, innovative, and adaptive and who are energetic, passionate, and committed to the cause. These people will be charged to plan, orchestrate, and execute full spectrum engineering operations, which range from tip-of-the-spear sapper and combat engineering, to general and geospatial engineering, to massive reconstruction of entire nations (such as Iraq and Afghanistan) and parts of our own (such as the Gulf Coast), and a wide range of diverse engineer missions and requirements in between and across the spectrum of operations (see Figure 1).

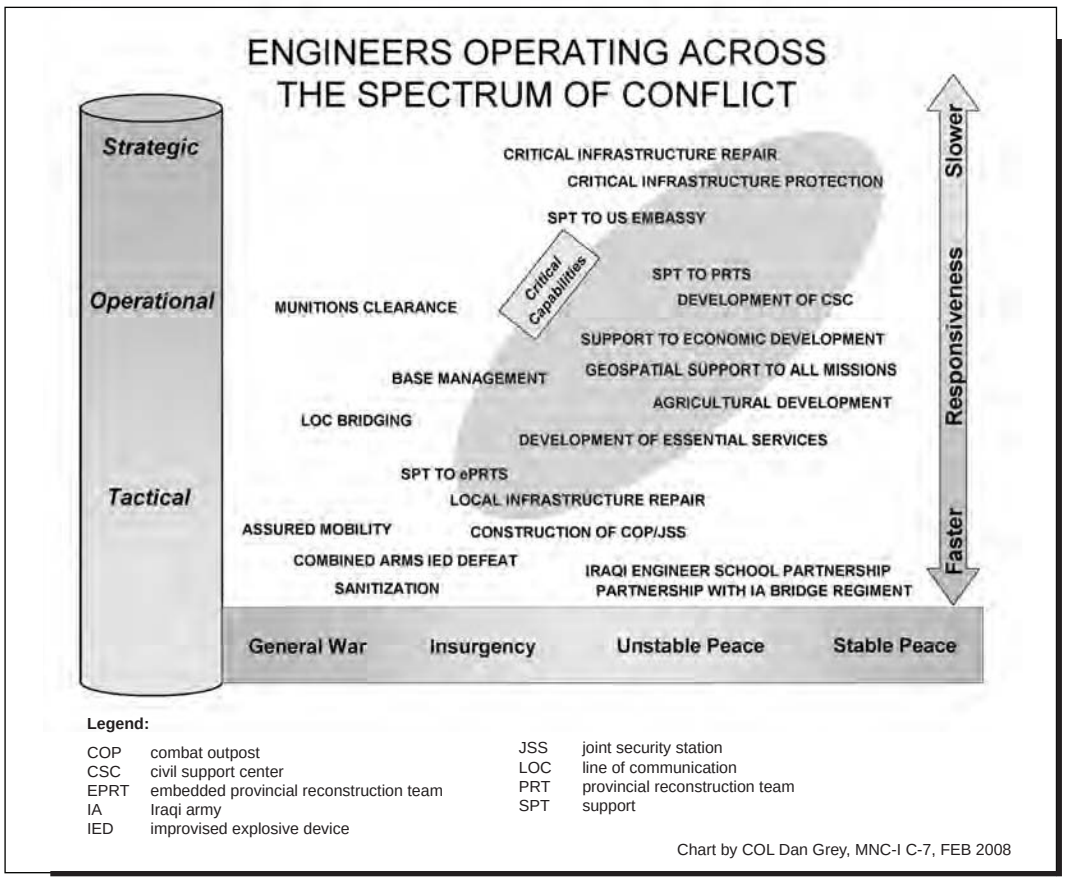


Figure 1

Our goal as a Regiment is to get the right people, with the right capability, at the right point in time and space, in order to deliver the desired engineer effect in full spectrum operations. Although there are many aspects to achieving this, we have chosen to focus initially on the *People, Training and Education,* and *Leader Development* aspects of this goal.

A key challenge is to figure out how to effectively harness all of the great engineer capability we have resident in our total Army Engineer Regiment—which includes the Active Army, Army National Guard (ARNG), United States Army Reserve (USAR), United States Army Corps of Engineers (USACE), Directorates of Public Works (DPWs), and contractors. Yet, we know from experience that even after we harness all of this capability, we still will not have enough engineers to meet all of the requirements and will have to partner with our joint, interagency, intergovernmental, and multinational (JIIM) engineer colleagues. JIIM is the way we will head in the future. More to follow on this as our journey unfolds…

To achieve these desired ends—and with **"Requirements and Future Roles/Missions"** as the driver, we have chosen to pursue a holistic, cradle-to-grave approach (see Figure 2) —to include **"Accessions," "Training and Education," "Employment,"** and **"Retention"**—all wrapped together and linked through a **"Strategic Communications/ Engagement"** plan. With the goal of Building Great Engineers for full spectrum operations and effectively managing our most precious resource—people—ENFORCE 2008 participants broke into six work groups (shown bolded in this paragraph) to ask the big questions, understand the issues, see ourselves, identify gaps, and develop an action plan for the way ahead.

We actually started work back in January when we kicked off our initial Engineer Leader Technical Competency (ELTC) Study. (See previous issues of "The Engineer Blast" and the ENFORCE 2008 issue of *Engineer*, January-March 2008, page 4, for details.) After several months of research, collaboration, analysis, and assessment, the charge to each work group was to start with a blank sheet of paper and unconstrained thinking and—

- Identify low-hanging fruit and quick wins.
- Identify what we do not know and need to investigate (scope out research paper topics to leverage our engineers who are going to school and need paper topics).
- Determine best practices wherever they might be found.
- "Think different," as we develop the way ahead.

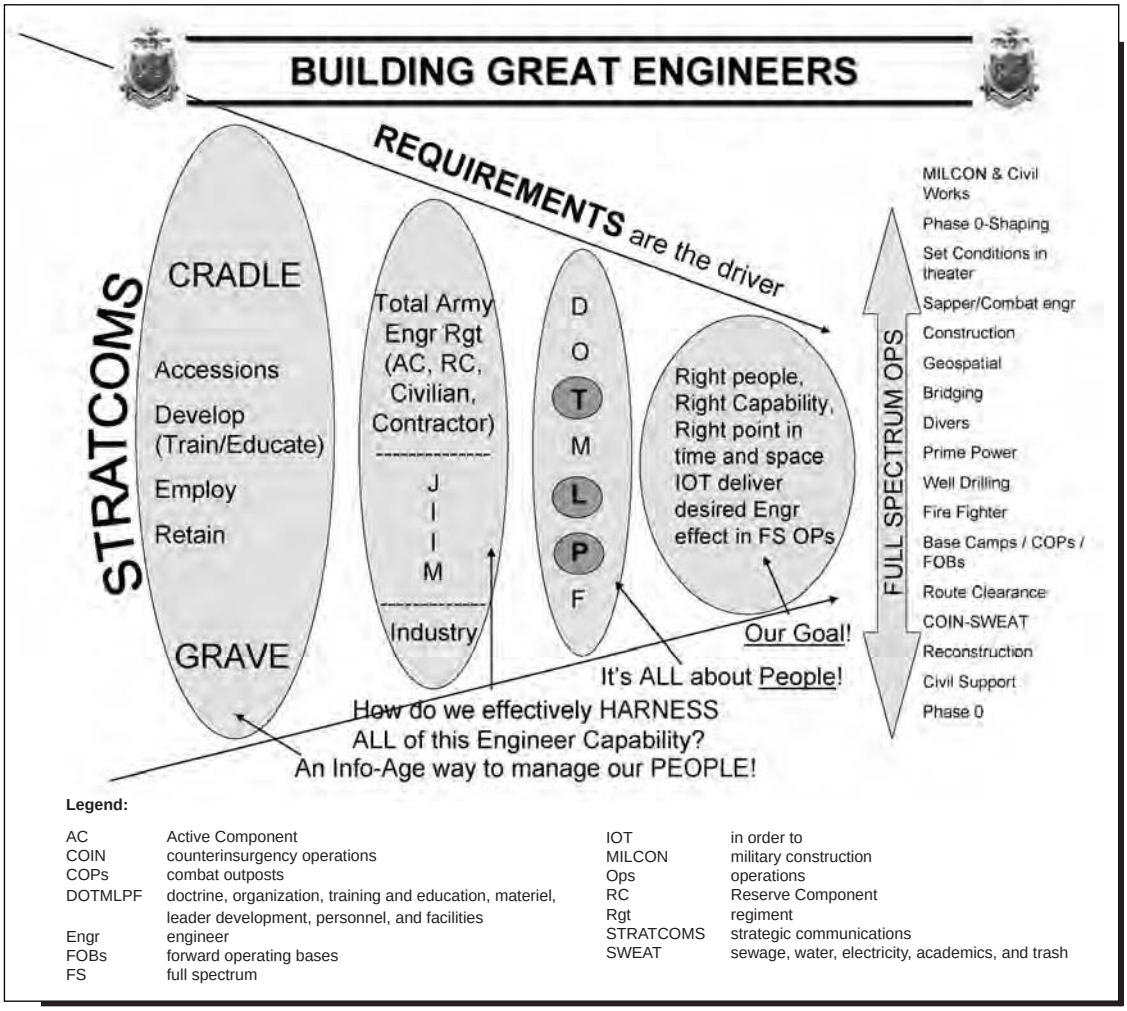


Figure 2

Guiding principles were to "Steal [Good] Ideas Shamelessly" (SIS), "Share [Good] Ideas Willingly" (SIW), communicate transparently, brainstorm (there are no "dumb" ideas), cross-talk, collaborate, and inform one another.

In order to unite the Regiment, yet provide diversity of thought, each work group had a healthy mix of uniformed and civilian leaders from all elements of the Regiment, as well as a mix of officers, warrant officers, NCOs and civilians, with a general officer responsible for leading and pulling the effort together.

"A key challenge is to figure out how to effectively harness all of the great engineer capability we have resident in our total Army Engineer Regiment..."

A final step and forcing function was the requirement for each work group to deliver an action plan back-brief to the Chief of Engineers, the Engineer School Commandant, and all of our ENFORCE colleagues on the final day of the conference. This led to a rich dialog and cross-fertilization of ideas. Each work group followed up with a written action plan that was delivered to the Commandant at the end of May. We are now transforming these six written plans into a Regimental Campaign Plan for Building Great Engineers, which I will brief to the Chief of Engineers by the end of July. The Campaign Plan will have clear, measurable goals, objectives, and time lines, which will be tracked and briefed to the senior leaders of the Regiment every quarter. I will brief the Plan to the field during the next Commandant's VTC – you are all invited to listen, dialog, and provide feedback.

In addition, the Chief charged each of the USACE Division commanders to develop a comprehensive and enduring engineer strategic communications (STRATCOM)/ Engagement/Outreach Program to tell the Army engineer story, in order to help Build Great Engineers in their respective areas of operation. He directed them to reach out to the entire regimental team in their geographical footprint—to include USACE; troop units of all compos; Reserve Officer Training Corps (ROTC) programs; engineer feeder schools, colleges, and universities; the Recruiting Command; regimental alumni; Families; United States Military Academy (USMA)/ROTC liaison officers; media; relevant professional associations, such as the Army Engineer Association (AEA), Society of American Military Engineers (SAME), Associated General Contractors (AGC), Association of the United States Army (AUSA), and others; politicians; and others who can contribute to our goal of Building Great Engineers. Each Division commander will brief the Chief on his program and execution plan at the USACE Senior Leader Conference in August. The flywheel is beginning to turn—HOOAH!

Let me assure you that this is not a short-term blip on the screen. The intent is to embark on a journey that will plant the seeds and shape our people, such that we will enjoy the fruits of our labor in the form of great engineers for the next century and beyond. This effort is in sync with the Chief's vision of moving from *Good to Great*[1] and being *Built to Last*,[2] in accordance with the two leadership classics by Jim Collins. (We recommend that you read these two books so you catch the Chief's vision and passion for moving our Regiment to the next level.) We will lay out the details and way ahead in future issues of "The Engineer Blast," issues of *Engineer*, VTCs, and other venues in order to ensure transparent communications and dialog.

That, in a nutshell, was the hard intellectual work we did during ENFORCE. We welcome and need your engagement and participation as we embark on our campaign to Build Great Engineers for full spectrum operations in an era of persistent conflict.

Brigadier General Martin is the Commandant of the United States Army Engineer School, Fort Leonard Wood, Missouri. He has served in a wide variety of command and staff assignments, including instructor duty at West Point and the Army War College and Commander of the 130th Engineer Brigade, during full spectrum operations in Europe, Kuwait, and Iraq from 2002- 2004. He is a graduate of the United States Military Academy, Command and General Staff College, and the Naval and Army War Colleges. He holds a master's and a doctorate from the Massachusetts Institute of Technology.

Endnotes

[1] *Good to Great* by Jim C. Collins, Harper Business: New York, 2001.

[2] *Built to Last* by Jim C. Collins and Jerry I. Porras, Harper Business: New York, 1994, 1997.

Turning the
Building Great Engineers (BGE)
Flywheel!

Findings and Preliminary Recommendations From ENFORCE 2008 Work Groups

By Captain William E. Mohr, Colonel Jerry C. Meyer, Colonel Robert A.Tipton, Colonel William H. Haight, Lieutenant Colonel Jeffery A. Anderson, Mr. Steve H. Tupper, and Brigadier General Gregg F. Martin

According to one attendee, if you missed ENFORCE 2008, **you missed the best ENFORCE in nine years.** (The attendee had only been to the last nine!)

Following are just some of the initial findings and preliminary recommendations developed during the Fort Leonard Wood portion of ENFORCE 2008, "Building Great Engineers." While many of the ideas have yet to be approved or prioritized, the intent of this article is to inform the Engineer Regiment of the current status of BGE and a proposed way ahead to increase engineer leader technical and tactical competency for full spectrum operations in an era of persistent conflict. Bold, italicized statements are from the book by Jim Collins, "Good to Great."[1]

"The point is to first get disciplined people who engage in very rigorous thinking, who then take disciplined action within the framework of a consistent system . . ."

The Fort Leonard Wood portion of ENFORCE 2008 built on the foundation of the Engineer Leader Technical Competency (ELTC) work groups. After five months of preparation, the work groups identified the need for engineer leaders to have deep tactical and technical competencies in several areas to support full spectrum engineer operations, which requires the ability to conduct simultaneous offensive, defensive, and stability operations. During the Fort Leonard Wood portion of ENFORCE, attendees representing the entire Engineer Regiment and all ranks rolled up their sleeves and developed specific tasks in each of the six ELTC work group categories that will allow us to build great engineers across the Regiment. The guiding principles were to "Steal [Good] Ideas Shamelessly" (SIS), "Share [Good] Ideas Willingly" (SIW), communicate transparently, brainstorm, cross-talk, collaborate, and inform one another. At the conclusion of the conference, each work group briefed the Chief of Engineers, the United States Army Engineer School Commandant, and all ENFORCE participants on their findings and

recommendations. While a consolidated plan of these findings and recommendations is still being formalized for approval and dissemination, following are some outcomes of each work group's efforts. For reference, the six work groups comprising the ELTC Study and ENFORCE 2008 were—

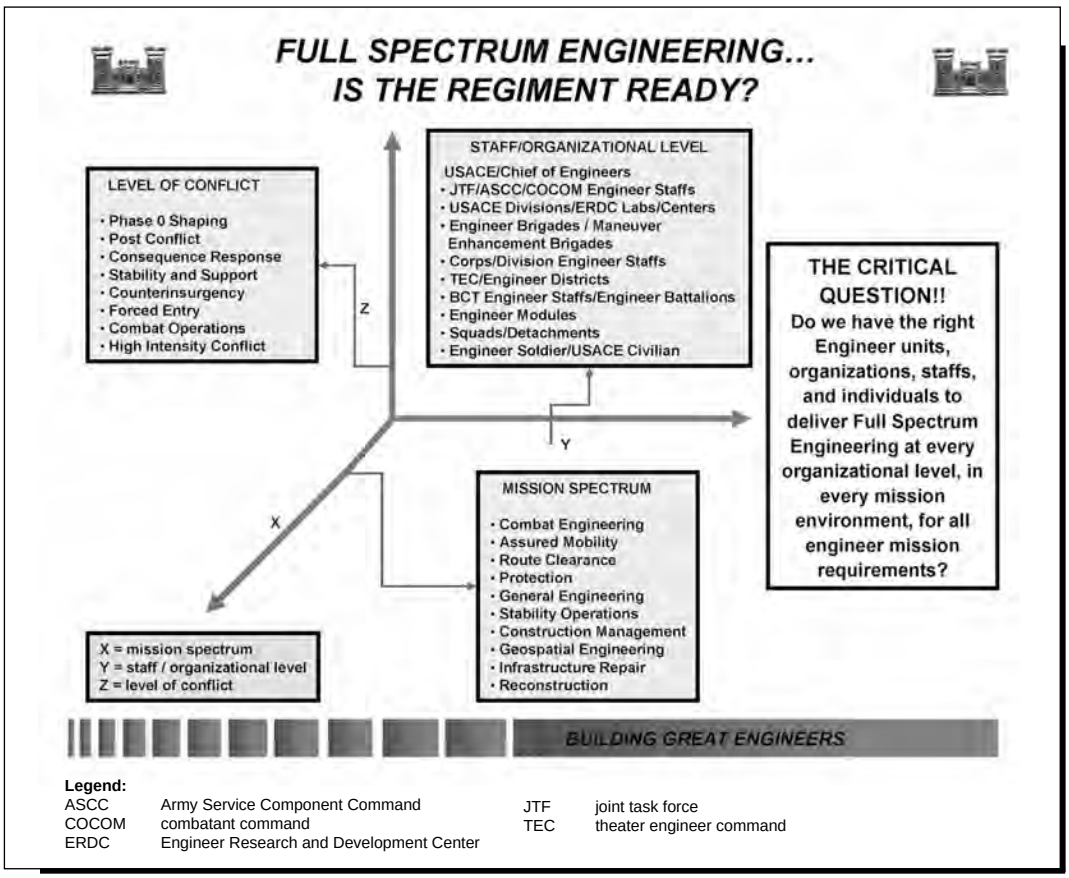
- Future Roles, Missions, Delivery Methods
- Accessions
- Training and Education
- Employment
- Retention
- Strategic Communications

"Great vision, without great people, is irrelevant."

The **Future Roles, Missions, Delivery Methods** work group took a three-dimensional look at the missions engineers are tasked to perform by joint doctrine (see figure below). The critical question we asked ourselves was "Do we have the right engineer units, organizations, staffs, and individuals to deliver full spectrum engineering at every organizational level, in every mission environment, for all engineer mission requirements?"

Throughout the 15-plus hours of focused discussions, a key concept continuously emerged. No matter which mission set we analyzed, the overarching thought was that the Modular Engineer Force provides the Regiment and the Army with the right capabilities for full spectrum engineering. The Regiment is currently challenged when it comes to synchronizing and planning full spectrum engineering. Without an identified and properly resourced and trained engineer staff that fully understands full spectrum engineering operations, the effects at all levels are more likely to be unsynchronized and inefficient.

Another key concept that emerged was that current Army and engineer doctrine does not identify capacity development or capacity building as a resourced mission driver. While the Army's White Paper titled "Stability Operations in an Era of Persistent Conflict," written by MG David A. Fastabend and endorsed by LTG James D. Thurman, identifies the concept and its criticality in full spectrum operations, our doctrine and our task lists do not. To properly resource engineer units for full spectrum operations, we must accept this as a mission and plan for it at all levels. A quote from the White Paper states, "Capacity building is fundamental to success in stability operations. It is the process of creating an environment, supported by appropriate policy and legal frameworks, which fosters institutional development, community participation, human resources development and enterprise creation, and the strengthening of managerial systems. Capacity building is a long-term and continuing process."



In a good to great transformation, people are <u>not</u> your most important asset. The <u>right</u> people are.

The **Accessions** work group analyzed the methodology by which the Engineer Regiment accumulates talent. The limited lateral entry of qualified personnel into a military career means that the people brought into the Engineer Regiment today will be our leaders tomorrow. Therefore, the accessions methodology becomes a key component of our talent management system and must be thoroughly understood.

Research conducted by the employment work group concluded that over 60 percent of all engineer officer positions require some type of an engineering degree. However, last year only 28 percent of the accessed officers had an engineering degree. In an effort to improve engineer officer accessions, the accessions work group made multiple suggestions.

First, the Army must explore ways to allow the Engineer Branch to access enough officers with engineering degrees. The accessions work group stresses the importance of individuals freely selecting the Engineer Branch, rather than being forced to join the Regiment. The campaign plan must include aggressive strategic communications to those populations deemed most desirable for entry into the Engineer Regiment. It was also recommended that fewer first and second choice nonengineering degreed individuals be admitted into the Regiment, while allowing more second and third choice degreed engineers to branch engineers. Other accessing ideas include the ability to guarantee degreed engineers the automatic opportunity to branch engineers.

Current operational demands require representation from multiple engineering fields, to include (but not limited to) civil, mechanical, electrical, and environmental engineering. Even with a supplemental education plan, the Regiment must access proportional numbers of officers across these fields to ensure that future requirements are fulfilled. One idea to increase lateral entry of talented engineers is to increase engineer marketing to promote branch transfers. The Engineer Regiment can exploit its ability to obtain educated engineers by targeting officers who have an engineering degree who are not in the Engineer Regiment. This accessions strategy can also be applied to Officer Candidate School (OCS), enlisted Soldiers, and the Department of the Army Civilians who round out our Regiment. All of these changes in accession protocol should not be misconceived as a onetime "talent grab" by the Engineer Regiment, but rather as a permanent engineer accessions strategy. The future of the Regiment depends on those we access today.

"Greatness is not a function of circumstance. Greatness, it turns out, is largely a matter of conscious choice."

The **Training and Education** work group focused on enabling execution of the same joint capability areas (JCAs) examined by the futures work group. In reviewing educational systems of U.S. sister Service engineers, as well as allied engineers, it was generally determined that our comrades not only access more degreed engineers, but they invest considerably more in their training and education (time, certifications, etc.) once accessed. Looking across officer, warrant officer, and noncommissioned officer (NCO) personnel categories, the group considered what training or education at what point in a career should occur for which personnel. Using a spreadsheet/matrix approach, they proposed individual training and education that needed to develop over an officer, warrant officer, or NCO career to support the selected JCAs.

A key accomplishment of the group was identification of an extensive methods-of-delivery list that provided a template to help consider different ways to obtain the same knowledge or skill. This list extends beyond Army institutional training to encompass industry experiences, self-development, civilian credentials, and degrees.

Considerable work had been accomplished prior to ENFORCE. Areas of concern included the totality of the United States Army Engineer School (USAES) educational system, current USAES instructional methods, and career educational timelines. To keep pace with the growing technical demands on the Engineer Regiment, the current educational system must be refined and adjusted to ensure a technically skilled workforce, as well as one that is tactically proficient.

The overall USAES educational system must adapt to accommodate more external factors. For example, Army engineers enter the USAES courses at different levels of expertise, but everyone must complete the course requirements through identical methods. Validation testing should be implemented to allow advanced students the opportunity to simultaneously receive beneficial training and education in other areas, rather than waste time repeating known information. To ensure that USAES becomes a world-class teaching operation, teachers need to be carefully interviewed

and selected based on individual teaching ability. Improving technical and tactical competency requires assigning the best teachers to be in the schoolhouse, instead of somewhat arbitrarily assigning available personnel.

Instructional methods during all USAES courses need to move into the 21st century style of teaching. Begin by revamping our current classroom instruction into a more hands-on approach to benefit the visual learners and increase realism. Create a wireless classroom by issuing every student a laptop computer and install a wireless network in all USAES classrooms. USAES must provide the infrastructure for every student to learn in an environment that young students are accustomed to.

Currently, our career timeline creates large gaps between levels of formal military schooling. We need to reduce these gaps by incorporating continuing education courses, to include Proponent-Sponsored Engineer Corps Training (PROSPECT) courses, satellite courses, and civilian courses. To further promote a deep technical competency within the Regiment, we need to provide institutional financial support, additional time and pay incentives for seeking higher education, and licensing within the field of engineering. These efforts will foster an environment for technical engineers to grow and retain their proficiency.

"First get the right people on the bus . . . and the right people in the right seats . . ."

The **Employment** work group focused on developing a new employment strategy that evaluates, segregates, and employs individual talent. Currently, the Regiment uses a legacy employment strategy that fills vacant positions with available personnel. Without question, human capital is the greatest asset in the Engineer Regiment, and developing a job assignment system that matches specific talents against requirements is a must.

Analysis of current requirements indicates that approximately 40 percent of all engineer colonel positions would be best served with an officer who has an engineering degree and technical training and certification beyond current professional military education (PME). With over 60 percent of all field grade positions being technical in nature and requiring an engineering or science and technology degree, the Regiment must provide career progressions that will develop technical leaders. Engineering competency results from the combination of education and experience; therefore, the Regiment must employ technically educated engineers along defined career paths that allow them to gather the necessary engineering experiences to become technically proficient. Specific career paths must still be developed, but one immediate employment idea is to place junior engineer leaders assigned to modified table of organization and equipment (MTOE) engineer units at installations with United States Army Corps of Engineers (USACE) field offices into short-term USACE utilization assignments to support the development of needed technical skills.

There is great potential with the newly expanded role of engineer 210A warrant officers to address some capability gaps. However, significant effort is needed to develop the appropriate education and employment strategy to support their development into effective technical experts at the platoon or entry level. Additional analysis is still needed to define the requirements for engineer NCOs, and initial indications are that updated career road maps are needed for them as well.

One method proposed to implement this new talent management system is to develop the "Green Pages" concept. Specifically, this concept is an interactive online database that allows individuals to post resumes and organizations to post available positions, which allows for an interactive talent search. The data input by users and the various personnel assignment organizations will create an open job market. By creating a competitive job market, individuals will have to develop their talents to be competitive for desired positions. In return, the Engineer Regiment will yield an increase in technical competency and a more professional workforce.

"Tremendous power exists in the fact of continued improvement and the delivery of results. Point to tangible accomplishments . . . people see and feel the buildup of momentum, they will line up with enthusiasm."

The **Retention** work group found that current retention rates and trends reveal that the Engineer Branch is losing junior officers at a faster rate than the Army average, and

degreed engineer officers are leaving the Army at a higher rate than those without an engineering degree. Similarly, rates of separation for enlisted personnel are on the rise, particularly at the 20-year mark. To begin to reduce these rates, the retention work group suggests an immediate improvement in individual mentorship and professional development. Alarming information has arisen from the Building Great Engineers project that many of the junior members of the Regiment are uneducated about future positions, engineering educational opportunities, and other career-enhancing opportunities that are provided by the Regiment. It is believed that a focused and dedicated mentorship program would improve retention rates by continuing to educate junior members on all the Engineer Regiment can offer.

In general, the Engineer Regiment must strive to become an adaptable organization that fulfills the needs of our people. The retention work group provided numerous ways to improve the quality of life within the Engineer Regiment. Recommended improvements will focus on incentive pay for technical engineers, additional duty service obligation requests for enlisted post of choice, increased USACE positions for young officers to use their technical degrees, and more flexible moves between the Reserve Component and Active Army. Results from the retention work group also stressed the need for a more adaptable employment plan that would attempt to fulfill individual desires on type of job and job locations. A balance of current Army requirements with personal career ambitions must be achieved to improve retention trends.

"Step by step, action by action, decision by decision, turn by turn of the flywheel—that adds up to sustained and spectacular results."

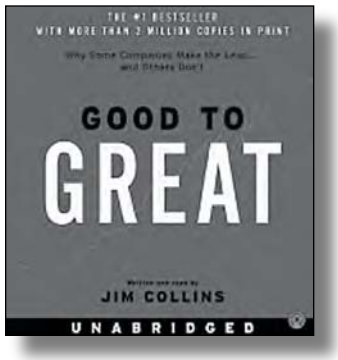
Tasked with analyzing and updating the engineer marketing plan, the **Strategic Communications** work group identified multiple areas to improve, but updating and improving the engineer website is the top priority. Other 21st century communications methods need to be improved as well, to include engineer videos, television ads, shows, and creating an interactive web portal.

Prior to the creation of our delivery methods, concentrated efforts must be conducted to create an effective engineer brand and a coordinated marketing plan. The current marketing organization is disconnected; USAES, USACE, and other engineering organizations fail to portray supporting marketing messages. Websites need to be compatible, information needs to be similar, and engineering messages should be consistent among all of these sources. Additional efforts should focus on researching the most effective modes of communication and determining the Regiment's target audience. With a focus on how to market and to whom, the Regiment can proceed to produce an effective marketing plan.

The strategic communications work group identified the need for a more proactive marketing approach. Local USACE offices and other engineer units have been tasked to interact with surrounding schools, communities, and youth to promote the Regiment. Specifically, the units have been assigned to educate local youth about the engineers and to encourage young college students to seek an engineering degree. The intent of such a proactive plan is to improve the quality of engineers that are accessed into the Regiment.

How can we possibly accomplish some of these actions in a time of war? This is precisely the right time to do so! (See the Chief of Engineers' "Building the Bench" article on page 10!) We are already seeing implementation and progress! Senior engineer leaders are visiting our best engineering colleges and universities, explaining the opportunities available in the Regiment . . . thousands of United States Military Academy (USMA) and Reserve Officer Training Corps (ROTC) cadets are being introduced to the branch in a spectacular fashion during summer camps . . . videos and promotional materials are being developed . . . nearly 70 percent of the officers branching engineers commissioned from the West Point class of 2008 had engineering degrees (a huge increase from last year) . . . use of laptops and a wireless classroom in the Engineer School is being piloted this summer . . . coordination to leverage sister Service educational courses is ongoing . . . USACE commanders are organizing regionally-based communication and execution confederations of engineer stakeholders, such as Military Academy Liaison Officers, ROTC units, engineer units, Recruiting Command, USACE assets, key university feeder schools, and public and private organizations and stakeholders . . . the flywheel is beginning to turn!

"There is a sense of exhilaration that comes in facing head-on the hard truths and saying, 'We will never give up. We will never capitulate. It might take a long time, but we will find a way to prevail.'"



The findings and recommendations in this article are not all-inclusive of the work that was done by the ELTC and ENFORCE work groups. To tie together all of the recommendations and findings, we will publish a "Regimental Campaign Plan" that will become a

touchstone document for engineers for the next 5-10 years. On 8 and 9 July, a Council of Colonels met at Fort Leonard Wood to prioritize and direct tasks to all members of the Regiment. We will continue to use the *Engineer Professional Bulletin*; *The Engineer Blast*; "Building Great Engineers," located at the Engineer School Knowledge Network on Army Knowledge Online (AKO); and e-mails to continue to update the entire Regiment on our progress to Build Great Engineers for the future!

Captain Mohr is the action officer for the Building Great Engineers project at the United States Military Academy at West Point, New York, where he received a bachelor's in civil engineering in 2004.

Colonel Meyer is the Director of Training and Leader Development at the United States Army Engineer School, Fort Leonard Wood, Missouri. He is a graduate of the United States Military Academy and has had two tours at West Point. He holds a master's in chemical engineering from the Massachusetts Institute of Technology.

Colonel Tipton is the Assistant Commandant, United States Army Engineer School, Fort Leonard Wood, Missouri. Previously the Maneuver Support Center Director of Training, he holds a master's in civil engineering from Montana State University and a master's in strategic studies from the Army War College and is a licensed professional engineer in Virginia.

Colonel Haight is the Director, Office of the Chief of Engineers, on the Army Staff. Previous assignments include C7 Engineer, Multinational Corps-Iraq, and Commander, Engineer Brigade, 1st Infantry Division. He holds a master's in mechanical engineering from the University of Washington and a master's in strategic studies from the Army War College and is a licenced professional engineer in Virginia.

Lieutenant Colonel Anderson is the Plans Chief in the Office of the Chief of Engineers in the Pentagon. He has had a variety of assignments, to include assistant division engineer in the 1st Armored Division; mathematics instructor at West Point; battalion and brigade executive officer in Giessen, Germany; and company commander in Fort Carson, Colorado.

Mr. Tupper serves as a liaison from the University of Missouri to Fort Leonard Wood, working issues in education, research, and economic development. He retired from the Army in 2003 after serving in various engineer units and staffs, to include a stint as a professor of military science (ROTC) and as an associate professor of electrical engineering at the United States Military Academy. He holds a master's in electrical engineering from the Georgia Institute of Technology and is a licensed professional engineer.

Brigadier General Martin is the Commandant of the United States Army Engineer School, Fort Leonard Wood, Missouri. He has served in a wide variety of command and staff assignments, including instructor duty at West Point and the Army War College and Commander of the 130th Engineer Brigade, during full spectrum operations in Europe, Kuwait, and Iraq. A graduate of the United States Military Academy, Command and General Staff College, and the Naval and Army War Colleges, he holds a master's and a doctorate from the Massachusetts Institute of Technology.

Endnote

[1] *Good to Great* by Jim C. Collins, Harper Business: New York, 2001.

("Building the Bench," continued from page 10)

to make sure people know what we do and what opportunities exist within the Regiment. The USACE New Orleans District is leading the way and setting a high bar in this arena. In fact, we are using some innovative ways to build the bench in the "Big Easy," such as networking and building relationships with faculty at universities, deans of engineering schools, and professors who are tapped into the skills and strengths of particular students. Of course, this will supplement—not replace—our traditional recruiting at career fairs and other direct-to-student efforts.

We are going to target our recruiting more appropriately to the specific competencies we will need in the future, as a result of our "gap" analysis. So we'll seek out specific skills, such as geotechnical or geographic information systems (GIS), and reach out to students and institutions with those strengths. To be *Built to Last*, we need people who are masters in their trade, as well as all-round skilled "pentathletes."

This is the beginning of getting the *Good to Great* "flywheel" in motion. We are just getting it started and, as we continue to focus on improving our technical competency and building a bench of disciplined people, we will gain momentum.

Thanks for joining in this critical "walnut." When we look back four or five years from now and see a Regiment *Built to Last*, you will have left an indelible print on our profession and our nation!

Lieutenant General Van Antwerp is the 52d Chief of Engineers and Commander of the United States Army Corps of Engineers. Previous assignments include Commanding General, United States Army Accessions Command and Deputy Commanding General for Initial Military Training at Fort Monroe, Virginia; Commanding General, United States Army Maneuver Support Center and Fort Leonard Wood, Missouri, and Commandant, United States Army Engineer School; United States Army Corps of Engineers Los Angeles District; the United States Army Division, South Atlantic, Atlanta, Georgia; and the 326th Engineer Battalion, 101st Airborne Division (Air Assault), during Operations Desert Shield and Desert Storm.

Endnotes

[1] *Good to Great* by Jim C. Collins, Harper Business: New York, 2001.

[2] I actually do have a jar full of walnuts and rice. The walnuts represent priorities, and the rice represents all the other stuff—the ankle-biters that get in the way all the time. If you dump out the jar, and try to put everything back in, you have to put the walnuts in first; if you put the rice in, and then try to add the walnuts, they won't fit and you'll end up breaking some walnuts when you try to close the jar. If you put the walnuts in first, then add the rice, the rice will work itself around all the walnuts and fit in where it can. The message being—tackle the priorities first, and then fit all the other stuff in as you can.

[3] *Built to Last* by Jim C. Collins and Jerry I. Porras, Harper Business: New York, 1994, 1997.

Developing an Engineer Leader Technical Competency Strategy:

Accessing, Developing, Employing, and Retaining Talent

By Colonel E. Casey Wardynski, Major David S. Lyle, and Captain William E. Mohr

The Engineer Leader Technical Competency (ELTC) Strategy must embody a holistic approach that accesses, develops, employs, and retains talent matched to engineer objectives. Military career paths, with their associated rank structure and progression, inhibit entry of talent from the civilian sector. Consequently, the Engineer Regiment can only develop, employ, and retain the talent that it initially accesses.

Where the Regiment lacks scope to selectively retain and advance talented leaders, it will incur higher costs for leader development and risks associated with unfit talent. Perhaps even more central to the ELTC Strategy, efforts must begin to match competency requirements to individual competencies. In so doing, the Regiment will move beyond assignment management and into talent management. By placing the right leader in the right job at the right time, the Regiment stands to reap benefits not only with operational efficiency but also in its ability to access, retain, and develop talent. Thus, accessions, development, employment, and retention of talent are interdependent processes that must be addressed holistically.

To create an ELTC Strategy, senior leaders must agree upon their strategic objectives. A review of recent officer accessions guidance reveals that only quantities were discussed; guidance omitted accession objectives with regard to officer competencies, abilities, or aptitudes. Even though objectives for such qualities are not explicitly set out in official accessions policy, they have gained increased prominence as leader development imperatives. More specifically, senior leaders have expressed qualitative requirements using such terms as "pentathlete" or "adaptive" leaders. The originators of the pentathlete term envisioned leaders who embody a range of competencies beyond those narrowly associated with combat operations.

By expressing the need for leaders with increased technical competencies and aptitudes for rapid learning and adaptation, senior leaders are in fact articulating the objectives for an ELTC Strategy. In essence, those who have skills beyond traditional combat objectives—the ability to quickly discern patterns of activity within new situations and conceive alternatives to address situations for which they have never been specifically trained—are exactly the demands of senior Army leaders. To allow requirements for specific competencies to evolve over time, we simply refer to these requisite skills as "talent."

Central to underpinning an all-encompassing strategy, the Regiment must build adaptability into its talent management organizations and processes. In other words, rather than relying solely upon a leader's capacity to adapt, the Regiment must embrace organizational adaptability. Such an approach provides greater depth in technical engineering competencies. For example, a strategy with the objective of producing adaptive individuals without an adaptable organizational structure is likely to result in personnel who are an inch deep and a mile wide. Few individuals have the aptitude to achieve expertise in multiple fields. However, by allowing engineers to specialize in a few areas of expertise and by building adaptable organizations that can employ the right talent to the right job at the right time, the Regiment can achieve a pentathlete capability but with much greater depth in competencies.

This is not to say that the Army does not also need adaptable leaders. Rather, the object of the ELTC Strategy should be a distribution of talent and a management system that can employ talent effectively.

Specifically for the officer corps, a focus on talent management reinforces development and retention programs in at least two ways. First, developmental assignments improve officer competencies gained during precommissioning education, postcommissioning institutional training, and advanced civil education. Second, achieving a close match between officer interests, competencies, and utilization directly improves officer career satisfaction and success, which sets the conditions to garner extended service among high-potential leaders. Thus, increased capacity to employ officer talent should serve as the capstone to access, develop, and retain high-potential, high-performance leaders.

Given the foregoing, an effective ELTC Strategy will recognize the interdependency of accessing, developing, employing, and retaining talent. The strategy must acknowledge the need for organizational adaptability to foster and benefit from depth in leaders' competencies. Finally, to make the strategy timeless, it must allow the attributes that define talent over time. In so doing, the strategy will leverage resources, policies, and organizations to achieve the objective of employing the right talent in the right job at the right time to meet future requirements.

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Major Lyle is deputy director of the Office of Economic and Manpower Analysis. He holds a doctorate in economics from the Massachusetts Institute of Technology.

Captain Mohr is the action officer for the Building Great Engineers project at the United States Military Academy at West Point, New York, where he received a bachelor's in civil engineering in 2004.

Harnessing the Technical Span of Control

By Major Jared L. Ware

The future engineer force and modularity have increased the technical span of control for combat effects engineer battalions. "Span of control" refers to the number of subordinate units a commander must command and control; at the battalion level, that is normally three to five companies of similar capabilities. Major William G. Pierce, an engineer officer, wrote a monograph on operational span of control in 1991 while a student at the Command and General Staff College. He concluded that the military education system is the primary factor that will enable a commander to expand his span of control. This holds true today as the Regiment organizes various capabilities into its existing battalions and brigades.

Engineers from the 65th Engineer Battalion conduct geospatial analysis in a field environment.

Technical Span of Control

A former commander of the 29th Engineer Battalion (Topographic) coined the phrase "technical span of control" to explain the structure of the unit, which was topographic in name only: the battalion had a dive detachment, a transportation company, a topographic company, and a topographic planning and control element. The success of the unit truly depended on the background of leaders entering the unit and their ability to broaden their horizons by understanding the capabilities of the units through the study of doctrine and operational experience gained while assigned to the battalion.

The key question to examine as the Regiment transforms is how it will prepare future battalion and brigade commanders to effectively lead with the increased technical span of control. Currently, there is no integrated training and education plan—or even a suggested career path—for future leaders to follow to strengthen their skill sets. Moreover, the current debate on the technical proficiency of engineer leaders suggests that the emphasis on a combat-oriented mentality has contributed to a decline in skills. That may explain part of the decline, but the increased technical span of control within combat effects battalions, with additional companies and detachments assigned to battalion flagpoles, has increased the demand for technical competency at all levels. If the Regiment fails to address this issue, the image of the Regiment could slowly erode to the point where "Essayons" is merely a catchphrase instead of our sacred creed. By taking some immediate steps, the Regiment can improve the ability of its leaders to harness their technical span of control and succeed in the engineering challenges ahead.

Training Junior Leaders

The 65th Engineer Battalion (Combat Effects) can be used to illustrate the issues associated with technical span of control because the battalion covers the combat, general, and geospatial engineering spectrums. Also, I can expound on the issue based on personal experience and empirical evidence. The battalion consists of a headquarters company, a forward support company, a geospatial planning cell, a dive detachment, a topographic company, an engineer support company, a clearance company, and an attached

chemical company. The battalion will also activate a sapper company and an explosive hazards team in the near future. Understanding that it is difficult for one person to master all of these capabilities in a short amount of time, the battalion has focused on training its junior leaders on the various engineer capabilities. The goal is to introduce them to the battalion's capabilities, offer them the opportunity to serve in more than one type of unit, and expand their overall technical proficiency.

Sappers from the 65th Engineer Battalion conduct demolition operations at Pohakuloa Training Area, Hawaii.

To address the increased technical span of control, the battalion has implemented an officer development and certification program to address technical proficiency at the junior officer level. This program is a series of 65 events that cover basic officer tasks as well as tasks related to combat, construction, and geospatial engineering. The battalion commander also closely manages the officer slate to ensure that junior officers, including dive-qualified officers, can serve in more than one type of engineer unit. Field grade officers have been selected based on a mixed background in combat, construction, geospatial and/or general engineering to ensure that no "single-tracked" mentality degrades the battalion's diverse training plan. The battalion's emphasis on training and education, as well as its ability to bring in multifaceted leadership, has significantly improved its technical span of control. Moreover, it has improved the commander's ability to command, control, and direct engineer capabilities with greater confidence in mission success. The ability to increase the technical span of control is directly proportional to the training and education of key leaders in multiple facets of full spectrum engineering.

A doctrinal or organizational modification cannot completely alleviate the span of control gap, particularly with the modular engineer force requirements. The answer lies in the training and education of field grade and company grade officers, since they are the major decision-makers in training and equipping their units. Junior leaders must understand the limitations of the battalion headquarters and strive to become the technical experts in their respective units. The more technically qualified the leaders at the company level, the further the battalion commander can expand the battalion's technical span of control. The inverse is also true; the less technically competent the junior leaders, the smaller the technical span of control at the battalion level.

Learning engineer organizations and their capabilities requires continuous training, education, and operational experience, which will allow the Regiment to prepare its future leaders to feel comfortable with an increased technical span of control.

Soldiers from the 71st Chemical Company generate smoke at Pohakuloa Training Area.

Future Emphasis

Continuous Learning. Expand distance learning training and mandate its completion as an educational requirement. The Army's sister Services require engineers to obtain professional engineer designations. At a minimum, the Army could have engineer officers watch a few training videos online during the Basic Officer Leadership Course, Engineer Captains Career Course, or intermediate-level learning courses and document their

completion with a certificate. Review the current engineer force structure and immediately address all significant leader training shortfalls with a more robust educational package.

Expand Unit Nomenclature. Keep the headquarters table of organization and equipment structure, but expand the nomenclature, naming battalions according to their missions and subordinate capabilities, such as *combat*, *construction*, or *prime power*. The "effects" title is confusing, especially when there are dive teams and geospatial planning cells in the same battalion structure. Review the naming conventions and get feedback from the field on whether or not the current structures enhance or detract from the Regiment's image.

Feedback From Engineer Leaders. Examination of the careers of current active duty engineer brigade commanders shows that they served key leadership and staff assignment time in either combat or construction units only. Each brigade now has at least one combat effects battalion and one construction effects battalion, as well as other companies and detachments that cover the gamut of full spectrum engineering. Perhaps these leaders could share their insight on topics such as, "If I had trained in this area, or had served in this type of unit, or had received this type of education, then it would have given me a wider technical span of control."

Good venues to share ideas could be—

- The Engineer Portal (<*https://www.mwu.army.mil/portal/eng/index.php*>)
- "The Engineer Blast," published by the United States Army Corps of Engineers. For past issues, login to Army Knowledge Online (AKO) and type in <*https://www.us.army.mil/suite/folder/1066848*>.
- The Engineer Leader Technical Competency site at AKO. To gain access to the site, e-mail Captain Mark Conrad at <*mark.aaron.conrad@us.army.mil*>.

Major Ware is the executive officer of the 65th Engineer Battalion (Combat Effects). He has served in the United States and overseas in a variety of engineer assignments. His e-mail address is <jared.ware@us.army.mil>.

The Engineer Writer's Guide

Engineer is a professional-development bulletin designed to provide a forum for exchanging information and ideas within the Army engineer community. We include articles by and about officers, enlisted Soldiers, warrant officers, Department of the Army civilian employees, and others. Writers may discuss training, current operations and exercises, doctrine, equipment, history, personal viewpoints, or other areas of general interest to engineers. Articles may share good ideas and lessons learned or explore better ways of doing things.

Articles should be concise, straightforward, and in the active voice. If they contain attributable information or quotations not referenced in the text, provide appropriate endnotes. Text length should not exceed 2,000 words (about eight double-spaced pages). Shorter after-action-type articles and reviews of books on engineer topics are also welcome.

Include photos (with captions) and/or line diagrams that illustrate information in the article. Please do not include illustrations or photos in the text; instead, send each of them as a separate file. Do not embed photos in PowerPoint®. If illustrations are in PowerPoint, avoid excessive use of color and shading. Save digital images at a resolution no lower than 200 dpi. Images copied from a website must be accompanied by copyright permission.

Provide a short paragraph that summarizes the content of the article. Also include a short biography, including your full name, rank, current unit, and job title; a list of your past assignments, experience, and education; your mailing address; and a fax number and commercial daytime telephone number.

Articles submitted to *Engineer* must be accompanied by a written release by the author's unit or activity security manager prior to publication. All information contained in the article must be unclassified, nonsensitive, and releasable to the public. *Engineer* is distributed to military units worldwide and is also available for sale by the Government Printing Office. As such, it is readily accessible to nongovernment or foreign individuals and organizations.

We cannot guarantee that we will publish all submitted articles. They are accepted for publication only after thorough review. If we plan to use your article in an upcoming issue, we will notify you. Therefore it is important to keep us informed of changes in your e-mail address and telephone number. All articles accepted for publication are subject to grammatical and structural changes as well as editing for style.

Send submissions by e-mail to <*leon.engineer@conus.army.mil*> or on a 3 1/2-inch disk or CD in Microsoft Word, along with a double-spaced copy of the manuscript, to: Managing Editor, Engineer Professional Bulletin, 464 MANSCEN Loop, Suite 2661, Fort Leonard Wood, Missouri 65473-8926.

Note: Please indicate if your manuscript is being considered for publication elsewhere. Due to the limited space per issue, we usually do not print articles that have been accepted for publication by other Army professional bulletins.

The Army Profession, the Engineer Regiment, and the Character of Their Leaders

By Dr. Don M. Snider

As the Engineer Regiment considers how best to attract and retain the future leadership corps it needs—commissioned officers, noncommissioned officers, and civilians—for this new era of persistent conflict, there are three factors with major implications for the Regiment's current efforts.

Implications for the Present

Profession vs. Bureaucracy. First, the Army that the Engineer Regiment serves is always precariously balanced between being a trusted vocational profession and being just another governmental bureaucracy. For many valid reasons, it is incredibly important which culture—profession or bureaucracy—is predominant within the Army and within the unit climate of each of its subelements. Among the most important reasons for the Army to be a profession are the following:

- There is no history of a bureaucracy ever creating the expert knowledge and practice of modern warfare. If America is to have effecive land forces, the United States Army must be, and function as, a profession—not as a bureaucracy.
- Without a professional culture and its inherent ethos, the essential trust relationship between the Army and the American people it serves—one based on the Army's expert capabilities and the effectiveness of their use—will be ruptured and at a potentially terrible price to both. After Abu Ghraib and similar incidents, some of that trust evaporated and only now is being regained.

Role of Army Leaders. The most significant factor in the resolution of this inherent tension between the two types of armies—professional or bureaucratic—will be the role played by Army leaders of all stripes. Day by day they will determine by their decisions, their presence, and their modeling whether America's sons and daughters serve in the satisfying, fulfilling role of "a professional and an expert" (as the Soldier's Creed states) or whether they will come to see themselves as merely time-serving government bureaucrats with no influence. Stated another way, the climate within any unit reflects accurately both the competence and the character of the leadership of that unit. As they have done in the past, Soldiers will rightly continue to ask their leaders, including their Engineer Regiment leaders, "How can I be a professional if there is no profession?"

Development of Moral Character. The Army is generally very good at developing the tactical and technical competencies of its leaders; training in military skills has long been a strong suit among the Army's core developmental routines. But it is equally clear that the Army is not nearly so good at developing, or more accurately, facilitating the development of the moral character of its leaders. Fortunately, the experiences of the Army in Iraq and Afghanistan have now renewed interest in a broader range of the human dimensions of such warfare and of the demands it places on Army leaders. To develop Army leaders for the future will take more than education and training. It will also take inspiration—individual moral awareness and development of a type that will allow leaders fully to accept and support the profession's ethic by "living it 24/7."

Implications for the Future

The issue this leads to is the moral character of Army leaders and the Army's ability to understand the leader's fighting spirit, the individual spirituality that so strongly informs individual character. This is not a new subject for the Army. Many older Soldiers will remember that for the post-World War II generation, General George C. Marshall spoke matter-of-factly about the common understanding within the Army: "The Soldier's heart, the Soldier's spirit, the Soldier's soul are everything. Unless the Soldier's soul sustains him, he cannot be relied on and he will fail himself, his commander, and his country in the end. It is not enough to fight. It is the spirit that wins the victory." [1]

How then does the Army, and those involved in the effort to rethink the development of leaders within the Engineer Regiment, understand and discuss the inspiration of individual leaders and its influence on their moral character and thus on their behavior, particularly in combat? The Army's approach centers on the Warrior Ethos, which has been promulgated as a four-sentence portion of the Soldier's Creed: *"I will always*

"Research from Iraq continues to show that authentically moral leaders better earn their followers' trust and thus possess a greater ability to exercise high-impact leadership."

place the mission first. I will never accept defeat. I will never quit. I will never leave a fallen comrade." However, while concluding that it is crucial for "all Soldiers [to] truly understand and embody this Warrior Ethos," the doctrine is almost silent on how such an element of character is embodied, developed, and sustained. There is no language, no developmental model, no suggested pedagogy. Even more unhelpfully, the doctrine states, "While individuals are responsible for their own character development, leaders are responsible for encouraging, supporting, and assessing the efforts of their people." [2]

Competence vs. Character

So how are Army leaders to fulfill this critical leadership role if the Army dismisses character development as the responsibility of the individual?

For the engineer leadership working on the Building Great Engineers project, there are two suggestions. The first is to update the Engineer Regiment's (and thus the profession's) knowledge of human development with language and developmental models that elevate the understanding and discussion of human spirituality to where it belongs and where it exists in current university research programs—to a position above religion. (For example, see <*http://www.spirituality.ucla.edu/*>.) Simply stated, this means that the Regiment understands and accepts that the spirituality of its Soldiers and leaders—their inspiration and worldview that shape character—can be informed by many sources, only one of which might, at the choice of the individual, be religion.

The second suggestion is that the leadership adopt the position that the Regiment's institutional role and responsibility in the realm of the Soldier's inspiration is to facilitate the individual's search for the moral meaning that defines a leader's personal character. This means moving beyond the Army's current "we don't do that" approach to the character development of its Soldiers and leaders. Research from Iraq continues to show that authentically moral leaders better earn their followers' trust and thus possess a greater ability to exercise high-impact leadership. In a stateside setting, this means producing leaders who are better able to mentor Soldiers and junior leaders, and thus the developmental process goes on and on.

This is not to suggest that the Regiment decrease its emphasis on developing the tactical competence of its Soldiers or leaders. However, the Regiment should restore appropriate balance to the development of both their competence and character. Both remain, as operations in Afghanistan and Iraq have repeatedly shown, essential to Soldiers and leaders in effective fighting forces.

Summary

In summary, the result of implementing these two suggestions over time should be two very salutary developmental outcomes for the Engineer Regiment and for the Army profession. Soldiers and leaders will be better grounded individually in what they believe and in their strength of will to act on those beliefs. And the dissonance between what they believe and hold dear and what the institution declares is "right"—according to the professional military ethic embodied in traditions such as the seven Army Values—would be reduced. Both outcomes move the Regiment and the profession in the direction of a more cohesive and effective fighting force.

Dr. Snider served three combat tours as an infantryman in Vietnam and commanded a battalion in the 7th Infantry Division. In his final active duty position, he served in the Office of the Chairman, Joint Chiefs of Staff. He retired from the Army in 1990 and in 1998 was appointed to the civilian faculty at the United States Military Academy at West Point, New York, where he is now a professor emeritus. He holds a doctorate in public policy from the University of Maryland and masters' in economics and public policy from the University of Wisconsin. He is a member of the Council on Foreign Relations and serves on the executive committee of the Inter-University Seminar on Armed Forces and Society.

Endnotes

[1] H.A. DeWeerd (Editor) "Selected Speeches and Statements of General of the Army George Catlett Marshall," *The Infantry Journal*, 1945.

[2] Field Manual 6-22, *Army Leadership*, 12 October 2006.

Engineer Regimental Remembrance Ceremony

The ENFORCE 2008 Engineer Regimental Remembrance Ceremony formally paid tribute to the 37 Sappers who had fallen since ENFORCE 2007—from 23 May 2007 through 9 May 2008. Brigadier General Gregg F. Martin, Commandant of the United States Army Engineer School, spoke about the sacrifice our Sappers are making for our country, as well as for countries all over the world. He also emphasized the importance of keeping our Wounded Warriors in the Army, employing them wherever they are able to serve.

A Roll Call of the 37 Sappers was read by Sergeant First Class Anthony Snincsak, Engineer Advanced Noncommissioned Officer Course, and Sergeant Major H. Timothy Williams III, Engineer Personnel Proponency Office.

SGT William E. Allmon
SGT Brian D. Ardron
MSG Scott R. Ball
SPC Richard B. Burress
PFC Adam J. Chitjian
SGT Cory L. Clark
SPC Michael W. Davis
SGT Dayne D.Dhanoolal
SPC William T. Dix
SPC Michael K. Frank
SPC Adam G. Herold
SFC Rocky H. Herrera
SGT Shawn F. Hill
SGT Bryce D. Howard
SPC Alun R. Howells
MSG Julian Ingles-Rios
SGT Samuel E. Kelsey
CPL Johnathan A. Lahmann
SPC David E. Lambert
PFC Robert A. Liggett
PFC Adam L. Marion
CPT Timothy I. McGovern
SSG Jeremiah E. McNeal
SGT John W. Mele II
PFC Joshua S. Modgling
SGT John C. Osmolski
SGT Joseph A. Richard III
SGT Bradley J. Skelton
SPC Erich S. Smallwood
PFC Tyler J. Smith
SGT Timothy M. Smith
SPC Brandon W. Smitherman
CPT Joshua E. Steele
SPC Matthew F. Straughter
SSG Shannon V. Weaver
CPL Kory D. Wiens
SFC William A. Zapfe

Regimental Command Sergeant Major Robert J. Wells paid the following tribute to the fallen Sappers:

There is no amount of honor we can bestow that one could say is "enough" when speaking of such sacrifice. It is our challenge as a group, and indeed as a country, to ensure that our Soldiers are not forgotten. These Soldiers were someone's battle buddy, fighting alongside their comrades, fully knowing the dangers they faced when going outside the wire. Most were young, never to know the happiness of falling in love or the joy of watching their children grow into young adults. But we will not despair. These Soldiers have given us the greatest of gifts. Our hearts will hold their memories dear. From this day forth, the way in which we live our lives will reflect that others have sacrificed so much. We will humbly work to preserve the legacy of sacrifice, bravery, and selflessness that these Soldiers have displayed. To the Families of our fallen, I cannot adequately express how honored we are to have known your Soldier. Although we are deeply affected by this loss, our suffering pales in comparison to the anguish you feel. Our collective hearts go out to you, this day and into the future.

The fellow Soldiers of these brave engineers have begun preserving this legacy of bravery by continuing to fight. This is especially hard to do. You see, they not only lived and fought alongside these brave engineers; they also carried them tenderly from the battlefield. Their emotions range from quiet humility to unbridled rage, tearful remembrance to quiet determination. Through all this, they persevere; they honor their brothers. Our thoughts and prayers are with them as they valiantly continue the mission. In a sense, this ceremony is a celebration—a celebration of life. We would do well in this celebration by finding some measure of comfort in the words heard today.

I know these engineers would want it no other way. The memory of these brave Soldiers brings a quiet determination to continue to live, continue to make a difference, continue to fight to make others free.

They did. We will.

Photo by Multimedia Visual Information Service Center

Regimental Awards

Each year, we recognize the best engineer company, lieutenant, noncommissioned officer, and enlisted Soldier—in each of the components—for outstanding contributions and service to our Regiment and Army. Every engineer unit in the Regiment can submit the name and achievements of its best of the best to compete in these distinguished award competitions. Only the finest engineer companies and Soldiers are selected as recipients of these awards. The Soldiers will carry throughout their careers the distinction and recognition of being the Engineer Branch's best and brightest Soldiers and leaders. Following are the results of the 2007 selection boards for the Itschner and Outstanding Engineer Platoon Leader (Grizzly) Awards, the Sturgis Medal, and the Van Autreve Award:

Active Army

Itschner Award: United States Army Pacific (USARPAC) nominee, 66th Engineer Company, Stryker Brigade Combat Team, 25th Infantry Division, Schofield Barracks, Hawaii.

Outstanding Engineer Platoon Leader (Grizzly) Award: United States Army Forces Command (FORSCOM) nominee, First Lieutenant Celio Biering, Bravo Company, 864th Engineer Battalion (Heavy), Fort Lewis, Washington.

Sturgis Medal: United States Army Europe (USAREUR) nominee, Sergeant First Class Travis Crow, Alpha Company, 173d Special Troops Battalion, Bamberg, Germany.

Van Autreve Award: USARPAC nominee, Specialist Christopher Slack, Alpha Company, 3d Brigade Special Troops Battalion, 25th Infantry Division, Schofield Barracks, Hawaii.

United States Army Reserve

Itschner Award: No nomination.

Outstanding Engineer Platoon Leader (Grizzly) Award: No nomination.

Sturgis Medal: Sergeant First Class Martin G. Durst, 401st Engineer Company (Multirole Bridge), 489th Engineer Battalion, Oklahoma Army Reserves, Enid, Oklahoma.

Van Autreve Award: No nomination.

Army National Guard

Itschner Award: 133d Engineer Company, 94th Troop Command, Wyoming Army National Guard, Laramie, Wyoming.

Outstanding Engineer Platoon Leader (Grizzly): First Lieutenant Todd D. Hotard, 225th Engineer Brigade, Louisiana Army National Guard, Pineville, Louisiana.

Sturgis Medal: Staff Sergeant Richard R. Hofstad, 1st Combined Arms Battalion, Minnesota Army National Guard, Brainerd, Minnesota.

Van Autreve Award: No nomination.

All of the nominees represented their major commands with the highest professionalism and dedication to the Engineer Corps's vision and deserve our highest praise. The award recipients were recognized on 8 May at ENFORCE 2008 at Fort Leonard Wood, Missouri.

Only the Innovative Need Apply — Brigade Special Troops Battalion Command

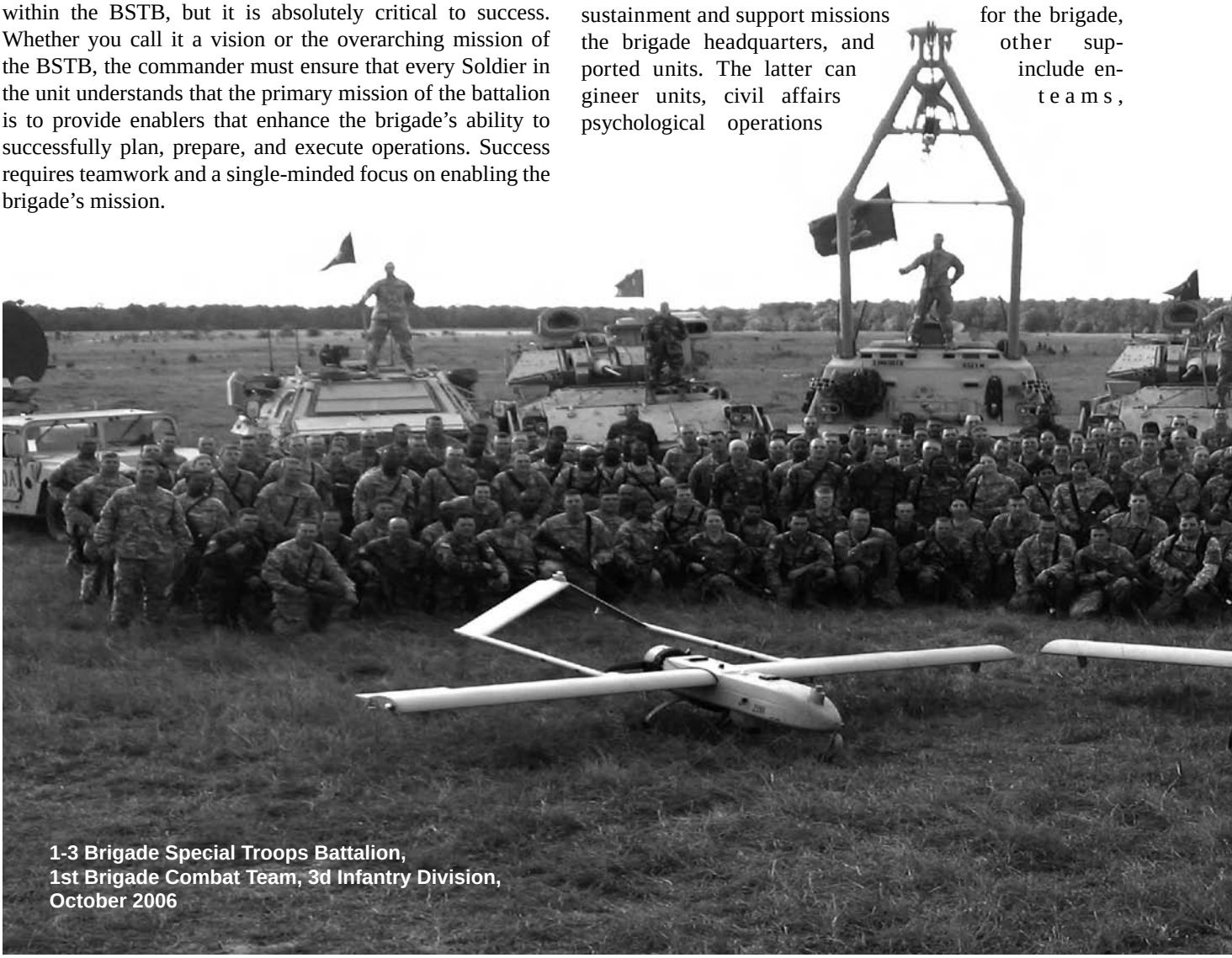
By Lieutenant Colonel Scott C. Johnson

One of the most unique and challenging battalion commands in the Army is the brigade special troops battalion (BSTB). Unlike most commands, the BSTB is composed of a variety of units with vastly different primary missions and branch-specific equipment and capabilities. The Army would be hard-pressed to find officers with the background to fully understand how to effectively train and employ engineer, military intelligence, signal, chemical, and military police assets.

Due to the diversity of the battalion, every commander will struggle with establishing teamwork and mission-focus within the BSTB, but it is absolutely critical to success. Whether you call it a vision or the overarching mission of the BSTB, the commander must ensure that every Soldier in the unit understands that the primary mission of the battalion is to provide enablers that enhance the brigade's ability to successfully plan, prepare, and execute operations. Success requires teamwork and a single-minded focus on enabling the brigade's mission.

The leaders and Soldiers in the battalion must be prepared to support the brigade when and where they are needed. The BSTB's responsibilities, in many cases, span the entire brigade combat team (BCT) area of operations. To achieve success, leaders at all levels must be adaptable, and the subordinate units must understand both their primary mission and the specified missions of the battalion.

The primary mission of the BSTB is to provide command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) support to the brigade with its organic assets and to execute other sustainment and support missions for the brigade, the brigade headquarters, and other supported units. The latter can include engineer units, civil affairs teams, psychological operations



1-3 Brigade Special Troops Battalion, 1st Brigade Combat Team, 3d Infantry Division, October 2006

(PSYOPS) teams, elements of the joint forces, and any other unit augmenting the brigade or the brigade headquarters.

The specified or overarching mission of the BSTB during combat can vary based on the brigade's requirements. As a command and control headquarters, the BSTB's primary focus must remain on providing support to the brigade, but it also has the ability to command and control a functional mission or, with some inherent limitations, area of operations. The specified missions for BSTBs have varied greatly over the last few years.

Many of the BSTBs had excess engineer officers and noncommissioned officers (NCOs) when they were formed. As a result, many were assigned missions associated with engineer operations in support of the BCT—civil or military. During recent deployments to support Operation Iraqi Freedom, BSTBs have been responsible for functional area missions in support of the BCT, such as Iraqi army military transition teams (MiTTs), Iraqi police transition teams (PTTs), and civil-military operations. They have also been given the mission to execute base camp operations and security.

Another unique aspect to some, but not all, BSTBs is the control of the BCT headquarters company. In some BCTs, the headquarters and headquarters company (HHC) BCT is a completely separate organization, and in others it is task-organized under the BSTB. When the HHC BCT is organized under the BSTB, a common understanding between the deputy commanding officer/executive officer (DCO/XO) and the BSTB must be established to ensure that everyone is working toward a common goal.

An effective technique in this case is to develop a memorandum of agreement that separates and assigns responsibilities for individual training and readiness requirements, company logistics and administration, and BCT staff functions, management, and training. The BCT staff is the purview of the BCT DCO/XO, and training, maintenance, and sustainment are command issues that the BCT staff must support. Success is predicated on mutual understanding and a company commander who can bridge the gap between the battalion and the brigade staff's requirements.

During combat operations, the integration of BSTB resources with the BCT staff has the potential to blur the lines of command. The brigade engineer, intelligence, and communications staff sections are responsible for planning and coordinating support for the brigade. Elements from signal and military intelligence companies enable the brigade staff to plan, manage, and coordinate intelligence collection and analysis and communication network management. The BSTB, however, is responsible for mission preparation and execution.

Successful execution is predicated on establishing the boundaries between the brigade staff and the BSTB. To ensure common understanding and situational awareness, missions for the company's resources must flow through the BCT operations and training (S3) section via the orders process. Direct coordination between the company and the BCT staff should be allowed and encouraged, but additional coordination with the battalion and tasking authority must remain in command channels.

Tactical Unmanned Aircraft Systems (TUAS) operations provide a good example of how this process can work. The BCT intelligence (S2) section publishes the intelligence, surveillance, and reconnaissance (ISR) matrix in coordination with the units requiring support. The initial ISR matrix should be published in a BCT fragmentary order (FRAGO) and in a BSTB FRAGO in an adequate amount of time to allow for planning at all levels. The military intelligence company has the ability to conduct parallel planning through the BCT FRAGO (essentially a warning order). Any technical or crew rest issues are worked out between the BSTB and the BCT S2 before the BSTB issues its order.

All the mission planning and preparation to successfully execute TUAS operations is the responsibility of the military intelligence company and the BSTB. Once the TUAS is airborne, tactical control of the aircraft may revert to the

"At any time, these Soldiers must understand the capabilities of both their own companies and the mission and functions of the battalion as a whole."

supported unit and the brigade. A TUAS liaison officer can synchronize targets, in-flight diversions, and time on station in coordination with the BCT S2 and S3 battle captains directly. By operating in this manner, both the military intelligence company and the BSTB can monitor execution while providing maximum flexibility. When the TUAS returns to base or lands, full control of the asset again returns to the military intelligence company and the BSTB.

This cooperative process should also apply to other assets in the military intelligence company, the signal company, and the chemical and military police platoons when they are supporting brigade operations. Depending on the missions the chemical and military police platoons are assigned, it is possible to keep all coordination and planning at the battalion level. When these units aren't engaged directly in the brigade fight, the BSTB has the ability to employ these units in support of the battalion's other missions or to enhance the battalion's execution of other support and security functions.

Regardless of the mission, the BSTB must have well-disciplined and trained Soldiers and adaptable leaders to achieve success. Individual training within the BSTB companies and the HHC BCT (if attached) must focus on individual expertise—both as a Warrior and in their specialty. The goal, as in any command, is to produce Soldiers skilled in the Warrior Tasks and Battle Drills and imbued with the Warrior Ethos. The signal, military intelligence, engineer, military police, chemical, infantry, and other Soldiers must also be highly proficient in their military occupational specialty (MOS)-specific skills at the individual and collective levels.

Training Soldiers on Warrior Tasks and Battle Drills is fairly straightforward. In the BSTB, training Soldiers, teams, sections, platoons, and companies is as complex and diverse as the organization and missions they are expected to perform. Developing, resourcing, and executing a training plan that creates experts in the broad range of specialties requires leaders who fully understand the mission of their unit and the training resources available to them. Training is available at the installation, through the various schoolhouses, from the Department of Defense and other outside agencies, from civilian technical institutions, and through other accredited venues. Leaders within the BSTB must be innovative in searching out training opportunities and resources for their Soldiers to ensure that they have the skills and tools to succeed.

The officers and NCO leaders within the BSTB must be adaptable and multifunctional. Officers from multiple branches and NCOs with a broad spectrum of MOSs fill the ranks of the BSTB. At any time, these Soldiers must understand the capabilities of both their own companies and the mission and functions of the battalion as a whole. This will enable the companies and units within the BSTB to achieve a certain synergy that enhances the overall effectiveness of the battalion and enable leaders to develop techniques to enhance the mutual support required to ensure their success.

As with any organization, it is a challenge to develop adaptable and innovative leaders, but the BSTB absolutely requires them. It requires a constant top-driven focus on how the unit and its diverse elements can improve their effectiveness and efficiency. It requires problem solvers who can develop solutions with limited resources. It requires a team mentality among the officers in the battalion and teamwork between what have historically been stovepipe organizations. It requires leaders to encourage and nurture junior leaders and Soldiers to develop workable solutions and implement them.

Commanders, staff officers, and senior NCOs assigned to the BSTB must be willing to expand their experience base, learn a variety of new skills and technical knowledge, and grow both professionally and personally. The success of the Army's BCTs requires dedicated and innovative leaders who are focused on achieving results. When approached with an open mind and willingness to place the mission of the brigade first, BSTB command is a personally and professionally rewarding experience that demands the best.

Lieutenant Colonel Johnson, United States Army Corps of Engineers, commanded the 1-3 Brigade Special Troops Battalion, 1st Brigade Combat Team, 3d Infantry Division, from 20 June 2006 to 17 June 2008. He is currently assigned as the United States Army Engineer School Chief of Staff.

4th Annual Best Sapper Competition

By First Lieutenant James Butler

From 6 through 8 May, the best sappers from across the Regiment converged at Fort Leonard Wood for the 4th Annual Best Sapper Competition. Hosted by the 577th Engineer Battalion and Sapper Leader Course personnel—and sponsored by the Engineer Regiment—the competition gave engineer units across the Army the opportunity to showcase their best Soldiers. The six-phase competition was to determine the best of the best. The Soldiers who stood out here are the best in their units, the best in the Regiment, and some of the best in the Army.

Best Sapper 2008

This year's competition, which was attended by 25 teams from 19 units across the Army, included ranks from private first class through major. The six major events were—

- Phase I: Nonstandard Physical Fitness Test (NSPFT)
- Phase II: Round-Robin
- Phase III: X-Mile Road March
- Phase IV: Sapper Stakes
- Phase V: Land Navigation
- Phase VI: X-Mile Run

Day One

Phase I—the NSPFT—set the tone for the rest of the competition, determining who was ready and who wasn't. The NSPFT consisted of 5 minutes of push-ups, 5 minutes of sit-ups, and 3 minutes of pull-ups. Only one member of a two-man team could perform each exercise at a time, but team members could switch throughout the designated time period. The intent was to throw a little strategy into the test. This made the teams think a little more about the event as it progressed. It also added an extra edge of competitiveness to the event. The NSPFT ended with a 3-mile run in interceptor body armor (IBA) and small arms protective insert (SAPI) plates.

After the NSPFT, competitors moved to Phase II—the Round-Robin—with the first subevent being a 150-meter swim with a poncho raft. As the 24 teams exited the water from the poncho raft swim (1 team had dropped out due to an injury), competitors were loaded on trucks again and sent to six different sites on Fort Leonard Wood to continue the event. The additional subevents for the Round-Robin included the stress shoot, grenade range, timber-cutting charge, counterforce charge, military operations on urbanized terrain (MOUT) breach, and urban challenge. The urban challenge, a new subevent this year, tested competitors' ability to shoot, move, and communicate through a simulated Iraqi village that consisted of realistic battle sounds, opposing forces (OPFOR) in traditional clothing, artillery simulators, and burn barrels, as well as live animals.

Photo by Multimedia Visual Information Service Center

A team from 20th Engineer Brigade conducts the buddy rappel as part of the Best Sapper Competition. The buddy rappel was part of the Day Two events on 7 May.

2008 Best Sapper Competition Teams

2LT Jonathan Browning SGT Jack Ramthun	20th Engineer Battalion Fort Hood, Texas
SGT Alexander Mack SGT Glenn Taylor	20th Engineer Battalion Fort Hood, Texas
SGT Justin Gaiser SPC Patrick Hernandez	20th Engineer Battalion Fort Hood, Texas
1LT Douglas Droesch 1LT Kyle Metzger	1st Engineer Battalion Fort Riley, Kansas
SSG Karen Antonyan SGT Matthew Rowsey	911th Engineer Company Fort Belvoir, Virginia
1LT Scott Sann SSG Travis Kaufman	U.S. Army Dive Company Fort Eustis, Virginia
CPT Jason Winkelmann 2LT Joel Groves	8th Engineer Battalion Fort Hood, Texas
SGT Rory Leslie SGT Kurt Nuhfer	37th Engineer Battalion Fort Bragg, North Carolina
1LT Scott Eshom 1LT Nicholas Soroka	502d Engineer Company Hanau, Germany
1LT Nicholas Fox 1LT Kyle Moore	11th Engineer Company Fort Riley, Kansas
2LT Zachary Taron 1LT Matthew Davis	3d Brigade Special Troops Battalion Schofield Barracks, Hawaii
CPT Christopher George CPT Josh Eggar	554th Engineer Battalion Fort Leonard Wood, Missouri
MAJ Stephen Peterson CPT Daniel Taphorn	1st Engineer Brigade Fort Leonard Wood, Missouri
SSG Michael Daley PFC Ryan Morison	562d Engineer Company Fort Lewis, Washington
1LT Christopher Clare 1LT Tyrel Keplinger	4th Engineer Battalion Fort Carson, Colorado
1LT Kristopher Valenti PFC James Conley	4th Engineer Battalion Fort Carson, Colorado
1LT Brian Burch 2LT Richard Miller	511th Engineer Company Fort Campbell, Kentucky
1LT Matthew Textor SGT Dustin Hughes	65th Engineer Battalion Schofield Barracks, Hawaii
SFC Michael Behnkendorf 1LT Shawn Hogan	20th Engineer Brigade Fort Bragg, North Carolina
SSG Timothy Knight SGT Joshua Morgan	2-8 Cavalry Division, 1BCT Fort Hood, Texas
1LT Nathan Magee 2LT Kevin Kirby	562d Engineer Company Fort Lewis, Washington
2LT Chris Williammee SPC James Wiard	72d Engineer Company Fort Riley, Kansas
1LT Lucas Hansen SPC Chris Gomez	72d Engineer Company Fort Riley, Kansas
2LT John Davis SSG Keith Novembre	562d Engineer Company Fort Lewis, Washington
1LT Craig Genung SGT Justin Claypool	591st Engineer Company Fort Campbell, Kentucky

2008 Best Sapper Competition Winners

First Place	CPT Jason Winkelmann 2LT Joel Groves	8th Engineer Battalion Fort Hood, Texas
Second Place	SFC Michael Behnkendorf 1LT Shawn Hogan	20th Engineer Brigade Fort Bragg, North Carolina
Third Place	MAJ Stephen Peterson CPT Daniel Taphorn	1st Engineer Brigade Fort Leonard Wood, Missouri

Scoring for the individual events was designed so that no one event could outweigh any other. That was done so a team wouldn't completely knock themselves out of the competition by doing poorly at one event. The idea was to look at the total Soldier, the most well-rounded sappers.

Day Two

At 0200, the 24 teams began Phase III—the X-Mile Road March. Designated the "X-Mile" because competitors were not told the total distance, the road march served as another hurdle in the competition to set the best sappers apart from their competitors. By the end of the road march, 5 teams had dropped from contention.

At 0730, the remaining 19 teams loaded trucks for their dropoff at the Sapper Stakes (Phase IV) events, which would add 5 more miles to the 16 the teams had already covered. The subevents that made up Sapper Stakes were the weapons assembly, foreign mine identification and improvised explosive device (IED) report, combat lifesaver (CLS) techniques, inert steel cutting, knot tying, Prusik climb and buddy rappel, mine detectors, and the obstacle course and physical endurance course (PEC). Throughout Sapper Stakes, teams moved on foot to each event to total 5 miles.

The biggest subevent of the phase is the Prusik climb and buddy rappel. However, due to safety concerns caused by lightning, this subevent—as well as the obstacle course and

Photo by Multimedia Visual Information Service Center

The 554th Engineer Battalion team assembles the M9, M16, M240, M249, and AK-47 weapons.

PEC course—had to be removed from the competition. With heavy lightning in the area, it was too risky for Soldiers to conduct rappels on the 45-foor Sapper Tower.

At 2100, the remaining 18 teams began Phase V—the Land Navigation Course. The event added another 6 miles to the 21 miles the teams had already covered and took them right up to 1 hour before the X-Mile Run of Day Three. By the completion of the land navigation course, another team had dropped out.

Day Three

Phase VI of the competition was the X-Mile Run, and only the top 10 teams advanced to this phase. Before starting the run, the competitors were unaware of the total distance or the mystery events on the route. The mystery events this year included carrying items weighing up to 110 pounds for various portions of the 9-mile run. By the completion of the event, the teams would have covered a total of 32 miles during the competition.

Photo by Multimedia Visual Information Service Center

A Sapper cadre member inspects knots tied by a Soldier from the 1st Engineer Brigade team.

Best Sapper 2009

Overall, the three-day event set the standard for the Best Sapper competitions in the future. This year's competition was considered to be the best one yet; and since it was tied in with ENFORCE, it had a lot more visibility than it had in the past. The 2009 competition is expected to be even better. The Sapper Leader Course cadre are already assessing the 2008 competition and beginning to plan for next year. Although they expect to use some of the same types of events in 2009, they will definitely make some changes to continue to challenge the competitors. The cadre encourage teams to begin preparing now and register as early as possible to make the cut for next year's competition.

First Lieutenant Butler is the executive officer of Headquarters and Headquarters Company, 577th Engineer Battalion, Fort Leonard Wood, Missouri. Commissioned through the Army Reserve Officer Training Corps, he is a graduate of the Sapper Leader Course at Fort Leonard Wood and the Ranger School at Fort Benning, Georgia.

Combat Outpost Construction in Afghanistan's Paktika Province

By Captain Nicholas O. Melin

A key tenet of successful counterinsurgency operations is the separation of the enemy from the local population. If insurgents are present in remote towns and villages, efforts to foster economic progress or build a representative government are consistently undermined. With space to operate, however, the local population can receive benefits from reconstruction, and the environment can be transformed to the point where insurgents can no longer find safe haven or sympathy.

Across Afghanistan in 2007, North Atlantic Treaty Organization (NATO) Soldiers pushed out into insurgent safe havens, lived among the local population, and worked to create space for reforms to occur. Nowhere was this process more challenging and critical than on the rugged Afghanistan–Pakistan border. Mountainous terrain, a porous border, and safe havens combined to create an environment where insurgents enjoyed freedom of maneuver within a few kilometers of the border. From this area, rocket attacks were launched at coalition bases, and villages were either abandoned or forced to support insurgent forces. Freedom of movement across the Pakistan border facilitated the supply and support of insurgent cells throughout eastern

HESCO Bastion Concertainer wall

and central Afghanistan, and the movement of groups of insurgents through critical mountain passes was not uncommon. The insurgents attempted to evade coalition patrols and move to safe havens and facilities hundreds of kilometers inside Afghanistan.

Mission

Team Bulldog from Bravo Company, 864th Engineer Battalion (Combat) (Heavy), out of Fort Lewis, Washington, received the mission to construct multiple combat outposts (COPs) near the Afghanistan–Pakistan border. The purpose of these bases was to interdict insurgent movement and separate the insurgents from local villages in the border region and larger population centers within Afghanistan. Partnered with the maneuver task force in the area—Task Force Eagle, 1-503d Parachute Infantry Regiment of the 173d Airborne Brigade Combat Team—Team Bulldog constructed three COPs during combined arms military operations. These COPs allow coalition forces in Paktika Province to control key insurgent avenues of movement and to interact more closely with the local population. An examination of the tactics, techniques, and procedures (TTP) used during one COP construction project reveals how combat heavy engineer units can integrate with maneuver forces and enhance their capabilities in austere areas of operation.

A Soldier from Bravo Company, 864th Engineer Battalion, Fort Lewis, Washington, nails the wall for a bunker at an outpost on an Afghanistan mountain.

Planning and Preparation

In early July 2007, Task Force Pacemaker (864th Engineer Battalion) tasked Bravo Company to partner with Task Force Eagle in eastern Paktika Province on a plan to construct a COP between a key forward operating base (FOB) and the Pakistan border. Increasing rocket attacks on the FOB from the border region, as well as a number of border villages with interests in economic programs, made coalition presence near the border essential. Task Force Eagle planned to conduct a combined arms operation along the border, providing sufficient security to execute construction operations. Given the enemy threat in the area, the initial occupancy construction for the COP had to be completed within the mission's two-week time limit.

Team Bulldog was task-organized as a combined joint team, with infantry Soldiers to augment security at the construction site and Afghan National Army (ANA) engineers to work as full partners on the project. Planning for the operation began with Team Bulldog's attached survey team conducting an initial design—based on information provided by the maneuver task force—to order materials. Given the lag time for ordering and moving materials from the logistical support areas to an FOB, it was essential to start the process as quickly as possible. Also, early designs were executed through daily coordination and discussion with the maneuver task force, ensuring that the guard towers, living areas, and walls were designed to their specifications. At the same time, the construction officer in charge made estimates of the contracted equipment and labor support required to finish construction within the mission's time limit. Augmenting military construction equipment with local equipment and local workers increased the amount of work accomplished per day and prevented delays due to the breakdown of equipment.

Since the location for the COP was at the top of a 2,400-foot ridgeline covered with trees, it was necessary to conduct a topographic survey to determine the amount of usable area available and the amount of work that would be required to clear the ridge of vegetation. Despite being ambushed by insurgents with small arms and rocket-propelled grenades during the survey, the necessary information was collected. It was determined that the shape of the COP, initially designed as a triangle, would have to be adjusted to fit the constraints of the land. It would take at least two days to clear the ridgeline and shape the terrain to reduce the slope inside the COP to less than 5 percent.

Upon completion of the survey, the full scope of work was developed:

- Construct a combat trail from FOB Bermel—another facility in the eastern part of Paktika Province—to the COP.
- Clear the hilltop of trees in order to provide space for construction and fields of fire.
- Erect HESCO Bastion Concertainer® walls.
- Place a concertina wire perimeter with fields of fire cleared.
- Construct guard towers.
- Construct vehicle and living facilities.
- Construct weapons facilities.
- Construct helicopter landing facilities.

Throughout the last week of July, final preparations for movement on the mission began at FOB Orgun-E, outside the town of Orgune. To ensure that all required materials were on hand for each day of the construction plan, CONEX shipping containers were packed by day with the required materials. The small size of the site necessitated staggered deliveries of construction materials. Additionally, lumber was precut and facilities were prefabricated wherever possible to speed on-site construction.

On 1 August, the construction team began continuous route construction from FOB Bermel toward the COP construction site. Since maneuver elements were already positioned forward of the construction site, it was determined that moving most of the construction element was tactically sound. The route for the road to get to the construction site had to be cleared of trees, reshaped, and widened. Upon arrival at the construction site, tree-clearing and ground-shaping operations began as ANA engineers staged workers and construction materials at the base of the ridge. The infantry platoon also began preparing fighting positions at key points surrounding the construction site.

Construction started with clearing trees from the COP site, placing concertina wire, grading and leveling the site, and constructing the HESCO wall. Integration of local national contractors in the project made it necessary to search and secure local workers and conduct multiple logistical convoys to support their equipment and to move construction materials. The role of construction surveyors on-site was essential since constructing flat pads for guard towers and living areas on a site that sloped in two different directions was a significant challenge. To ensure that the interior of the COP could not be observed from nearby hilltops, it was determined that a portion of the site would have to be raised and stabilized with a HESCO retaining wall before construction of the main wall. Next, guard towers were constructed, after consulting with the maneuver commander who would take control of the COP. Construction of weapons facilities, vehicle facilities, and barracks areas and electrical wiring of the base all occurred during the last phase of the project.

Completing the entire project within the time limit necessitated multiple logistics packages (LOGPACs), as well as an aggressive security plan. Team Bulldog's attached infantry platoon led more than 20 LOGPAC convoys during the mission, shuttling materials and repair parts to the construction site. The attached infantry and ANA platoons also conducted dismounted patrols in the area of the jobsite. Security measures were necessary because insurgents launched three rocket and mortar attacks on the construction site during the mission, and one LOGPAC convoy was attacked with an improvised explosive device (IED). Despite these obstacles, Team Bulldog successfully completed the COP and returned to FOB Bermel.

A Soldier places a concertina wire perimeter.

Lessons Learned

During the construction of the one of the COPs, Team Bulldog developed a number of TTP that may be useful to units tasked to construct COPs in austere locations:

Engineers from Bravo Company, 864th Engineer Battalion, Fort Lewis, Washington, put up wall structures for a new bunker that will serve as an outpost in the middle of the mountains in eastern Afghanistan.

- Integrate early with the maneuver task force for planning the combined arms mission in order to identify logistical and security requirements, as well as control expectations for the construction effort.
- Initiate the design and material estimate for the project as soon as possible, checking all plans with the customer. Procuring materials and funding for large construction projects takes deliberate effort months before execution.
- Verify fields of fire for all guard towers before construction. Determine tactical requirements that impact the design process.
- Conduct a full topographic survey, if possible. This will reveal construction issues before movement is initiated.
- Ensure that surveyors are on-site during construction to resolve construction issues.
- Precut and pack materials by the day of construction to avoid having to sort materials on-site.
- Augment military equipment and labor with civilian equipment. Military equipment is required because civilian equipment can be unreliable if used exclusively. However, use of civilian equipment to accelerate production is necessary when executing missions with fixed suspense dates.
- Inspect all civilian equipment a week before movement to allow time for repairs. Planning for civilian contractor integration into a combined arms mission must be deliberate and thorough to ensure that contractor delays do not affect mission accomplishment. Operations security requirements must also be considered.

Enduring Effects

The COP construction mission described in this article demonstrated that maneuver units can integrate construction engineer effects into their operational plan as part of a counterinsurgency campaign. If properly planned and synchronized with the maneuver task force, construction engineers can leverage their unique capabilities as a part of the counterinsurgency fight. A forward-positioned COP along the Pakistan border led to an immediate disruption of insurgent activity in the local area and caused a dramatic decrease in insurgent activity in the vicinity of FOB Bermel. With the ability to directly observe and control the border, Task Force Eagle made strides in separating the enemy from the local population. These effects were made possible by the efforts of combat heavy engineers.

Captain Melin is the commander of Bravo Company, 864th Engineer Battalion, which deployed as part of Task Force Pacemaker. He previously served as civil engineer and assistant operations officer for Task Force Pacemaker. He is a graduate of the United States Military Academy at West Point, New York.

ENFORCE 2008

Best Sapper Competition winners

Regimental Spirit Run

Chief of Engineers State of the Regiment Address

Gold DeFleury Medal recipient
LTG (Ret) Robert Flowers

St. Louis, Missouri

Industry Partners demonstration

Remembrance Service in honor of the 37 fallen Sappers

Engineer Regimental Ball

Honoring Regimental CSM Clint Pearson

Design by Jennifer Morgan

Photos by Multimedia Visual Information Service Center
Fort Leonard Wood, Missouri

Field Force and Facility Engineer Training

By Major Erik C. Backus

Today's counterinsurgency (COIN) operations require engineer leaders to have knowledge of both the lethal and nonlethal effects that can be used on the battlefield. In Iraq and Afghanistan, engineer officers and noncommissioned officers are being asked to provide technical expertise some of them are ill-equipped to give based on the engineering educations they have received through the Officer Education System (OES) and Noncommissioned Officer Education System (NCOES), not to mention the nonengineering-related civilian-source degrees they possess. Conjuring up a bill of materials (BOM), writing a concise yet complete and understandable scope or statement of work (SOW) for construction, and pushing the requests of the maneuver commander through the contracting and tasking processes are skills our leaders need to improve. This kind of training needs to be inserted immediately.

Further, engineer leaders at all levels are being asked to provide oversight and assistance for the life support of our Soldiers through base camp and life support construction. The mission of quickly establishing and maintaining safe and secure contingency operating locations of all sizes is a task that is dumped into the engineer's lap in our current contingency operation. Facilities engineering skills—to include environmental assessments, master planning, life-cycle costing, and maintenance oversight—are skills that have not been stressed in our professional force. Because of the overwhelming use of and need for these skills as we continue the War on Terrorism, the United States Army Engineer School (USAES) should develop a cell that can ensure the development and maintenance of certain core competencies that our engineer leaders need to meet the challenges of this war.

Personnel from the 243d Construction Management Team set up a surveying beacon near Patrol Base Dragon in Iraq.

Core Competencies for the Future

Five core engineer competencies for the required future of COIN operations, based on lessons learned in the War on Terrorism, are—

- Construction project development.
- Contracting and funding.
- Field force engineering.
- Facility engineer planning.
- Executing the total quality management process.

Each of these has unique attributes that must be considered in the implementation of any future training program.

Construction Project Development

Construction project development consists of three primary elements that every engineer needs to be able to perform:

- ***Project scoping.*** Our engineers must be able to site-adapt a pre-engineered design, develop limited independent contingency designs, write indigenously understandable construction specifications, and write a clear and concise SOW.

- ***Project estimation.*** Our engineers must be able to develop reasonable project schedules using either government or commercial software, do construction plan and specification take-offs in order to develop a BOM, and develop an order-of-magnitude estimate with the application of estimating tools and sources.
- ***Project package development.*** Our engineers must be able to compile the SOW, drawings, and specifications; review documents to ensure that they meet required life-safety, regulatory, and code provisions; and gain the applicable endorsements and buy-ins through the staff process.

All of these skills are required on and off the forward operating base (FOB) in order to provide the maneuver commander with an effective way to shape the terrain by developing well-planned and well-executed construction projects.

Contracting and Funding

Contracting and funding requires an understanding of both these separate yet interrelated processes. The contracting process includes—

- Coordination with the applicable contracting agency.
- An understanding of the roles and responsibilities of the contracting officer (KO), the contracting officer's representative (COR), and the contracting officer's technical representative (COTR).
- Bid selection processes and rules.
- Construction contract administration.

The funding process includes—

- An understanding of construction fiscal law and limitations.
- An understanding of contingency funding processes such as the Joint Facilities Utilization Board, Joint Acquisition Review Board, Logistics Civil Augmentation Program, and military construction.
- The development of funding packets.

While easy to describe, this skill set is enormous in its implications on the battlefield. Without it, our engineers can quickly become stymied in their ability to make their project packages achieve the results intended.

Field Force Engineering

Field force engineering (FFE) links engineer components to provide a seamless capability. Its elements center on—

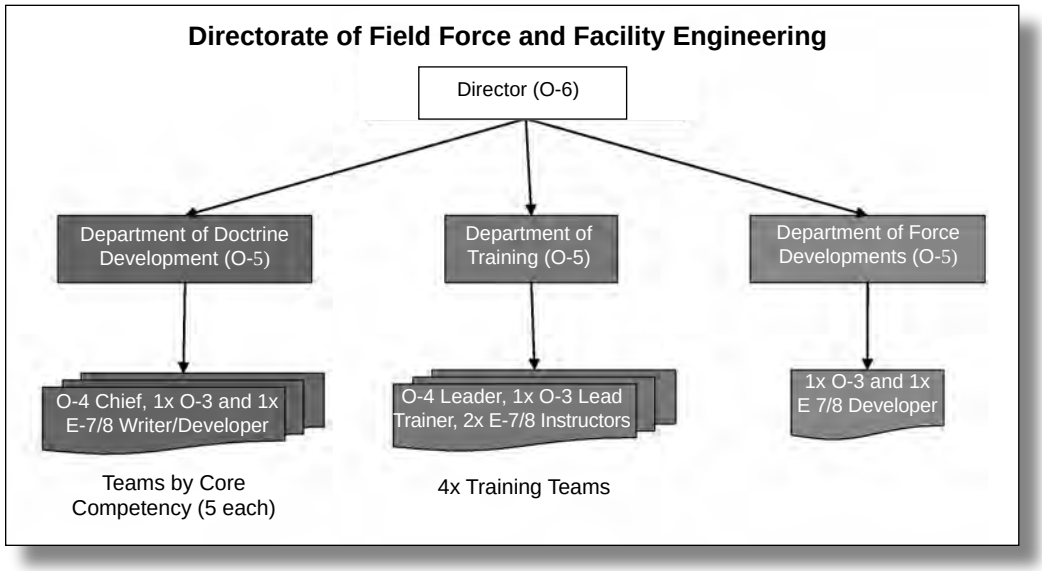
- ***Force protection.*** Engineers have much to do with developing appropriate force protection elements, including—
  - Development and enforcement of antiterrorism and security engineering criteria, including their integration into project design.
  - Execution of indirect-fire mitigation and risk analysis.
  - Fostering an understanding of the relationship between base-centered force protection and lethal operations.
- ***Life support.*** Providing life support takes the form of—
  - Facility development and facility program requirement identification.
  - Development of, and connections to, necessary systems such as electricity, sanitation, water, and solid waste disposal.
  - Critical analysis of programming requirements and regulations on life support.
- ***Infrastructure.*** Engineers play a large role in any facility's infrastructure, including—
  - Development of base and localized infrastructure systems.
  - Coordination with local support structures.
  - Maintenance and crisis-resolution planning.
- ***Life, health, and fire safety.*** It is critical that engineers understand life, health, and fire safety requirements, including—
  - Code compliance, egress, and inspections.
  - Prioritization of efforts.
  - Building siting and dig permit/safety program development.
  - Construction site safety marking and safety plan implementation.

"Protect the force" has been rendered on many a mission-essential task list by unit commanders, but it is critical that we empower engineer leaders with the skills listed above to enable that protection to happen.

Facility Engineer Planning

To execute the long-term engineer fight, our leaders need to be educated in master planning, facility management, and operational planning and have an understanding of economic battlefield effects.

- Master planning involves—
  - Long-range facility planning.
  - Base alignment (opening and closure).
  - Facility requirement identification.
- Facility management/operational planning include—
  - Supporting the maneuver commander by planning for pre-positioned BOM.
  - Assisting with operations and maintenance takeover.
  - Transitioning to Installation Management Authority/ Department of Public Works control of installations.



- Economic battlefield effects include—
  - □ Local Commander's Emergency Response Program (CERP) efforts.
  - □ Installation effects on the local economy.
  - □ Development of micro-industries and employment as a part of COIN.

Engineers have a key piece in the nonlethal fight and can use these planning skills to provide the combatant commander with much more bang for his buck.

Total Quality Management Processes

Mastery of total quality management processes includes an understanding of—

- ***Quality assurance (QA) and quality control (QC) systems.*** QA/QC education must teach leaders to integrate QC into all projects, develop a QA program with planned oversight, and develop corrective action plans in case quality does not meet standards.
- ***Project tracking and work order system management.*** Project tracking and work order system management needs leaders who can execute database management, use geographical imaging software, and provide real property management. This last skill set not only ensures that the commander gets what he wants; it ensures that he doesn't get a lemon.

Future Education Leader

The Facility Engineer Group (FEG), the headquarters for facility engineer detachments and teams, is transitioning and preparing to hand over its functions to the 412th and 416th Theater Engineer Commands. Up until now, the skill sets and core competencies listed in the previous paragraphs have resided within the personnel and organization of the FEG. With its loss, some organization is needed to ensure that the education systems of tomorrow integrate these skill sets and core competencies and ensure their development during practical assignments. Ultimately, USAES must be the education leader with an organization such as a Directorate of Field Force and Facility Engineering (see figure above) to apply these skills to practical Army challenges, followed by developmental assignments that enable leaders to refine these skills and gain invaluable experience. I recommend that this directorate include departments of doctrine development, training, and force developments. With this structure, and the integration of training in the above core competencies into our engineer OES and NCOES, this directorate could enable the collection and dissemination of the knowledge engineer leaders will need to win the construction and facility engineer fight for the future.

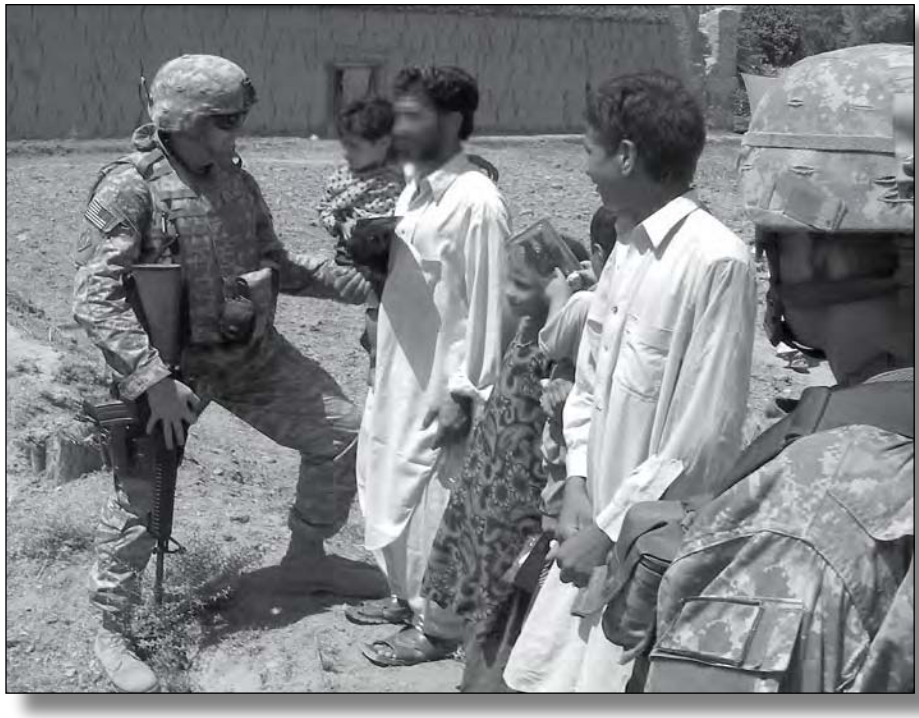
Hard lessons learned in Afghanistan and Iraq have taught us to change our tactics and remember some lost lessons learned. The COIN fight in Iraq requires that today's engineer leaders equip tomorrow's engineer leaders with the skills to provide world-class military engineering capability to combatant commanders in the contemporary operating environment. These core competencies are even more important as we continue to engage in environments like the Middle East, where political and economic operations are the essential elements that enable us to consolidate military successes and achieve national objectives. Construction, field force, and facility engineering skills are the critical missing link to prevent failure in these kinds of operations in the future. We must act now, while we are meeting success in the breach, to ensure that we are not bogged down by the obstacles our enemies have tried to place around us.

Major Backus has served in a variety of command and staff assignments, commanding the 955th Engineer Company (Pipeline Construction), and serving in the 389th Engineer Battalion (Combat) (Heavy) in Baghdad during the first year of Operation Iraqi Freedom. He is a registered professional engineer in Missouri, currently serving as the lead design engineer for the 20th Engineer Brigade (Combat) (Airborne), deployed to Logistics Support Area Anaconda in Balad, Iraq.

Junior Officers in USACE

By Colonel Christopher W. Martin

As a junior officer in the Army, are you contemplating whether or not a tour in a United States Army Corps of Engineers (USACE) district is the right job for you? Are you concerned that you will not receive the training you need to be a successful officer in USACE and that the likelihood of further promotions will be lessened? Maybe you are concerned that this is a sleepy job that you will not enjoy, or that working under the supervision of a civilian will impede your professional development.[1] You might even be concerned that although you are an engineer officer, you do not have adequate experience in construction or the ability to perform this job successfully. Perhaps all these things are troubling you, and although you have heard great things about working for the "Corps," you are still hesitant to talk to the Engineer Branch about assigning you to that type of job. If these things are bothering you, and you aren't sure if this is the kind of assignment you want, I hope to put your concerns to rest and assure you that a tour with a USACE district is both professionally and personally rewarding, as well as challenging. But the Army, USACE, and the officer will all benefit from the experience.



During a deployment to the Afghanistan Engineer District, these engineers work with Afghan nationals on a project.

"A tour with a USACE district is both professionally and personally rewarding, as well as challenging."

A job in a USACE district exposes young officers to a whole new side of the Corps of Engineers, allowing them to gain experience in construction, develop and hone negotiating skills, and develop new leadership skills. Ideally, a new officer reporting to USACE will be assigned as a project engineer to an area office on a military base as part of the military construction (MILCON) program. The construction experience a captain or major gains in the area office is invaluable. There, officers learn to read construction blueprints and inspect actual construction for conformance to required specifications, along with learning the basics of construction management. Part of the job will also likely include negotiating modifications to construction contracts with a prime contractor on the project. These same skills are required in Afghanistan and Iraq every day, not just by USACE representatives but also by units and Provincial Reconstruction Teams (PRTs).

Although not normally assigned to "leadership" positions in an area office, officers still have a great opportunity to display, refine, teach, and exercise leadership skills. Not having been exposed to the civilian personnel system in previous assignments, you will have to learn how the new civilian system, known as the National Security Personnel System (NSPS), works. Regardless of your position in the area office, you are looked upon differently, both by contractors and by the Department of the Army civilians you work with. All of them expect the utmost in professionalism, honesty, discipline, and levelheadedness. USACE civilian employees are all required to be in a leadership development program when they first come on board, and you may have opportunities to talk to them about leadership. You will also likely have the opportunity to work for a civilian boss and learn that good leadership is not restricted to just military officers.

A USACE assignment is a great opportunity to continue your professional development following a deployment. You could catch up on your professional reading, progress toward a master's degree, or become licensed as a professional engineer. Everyone around you will work "civilian" time, and regardless of how hard-charging you are, at some point you realize you cannot do anything when you are the only one in the office. Weekends are generally open and available to spend time with your family.

This doesn't mean you won't deploy. Officers are needed in the Afghanistan Engineer District, as well as the Gulf Region Division, which has three districts inside Iraq. In addition, many districts maintain a Field Engineering Support Team–Advanced (FEST-A), which includes a military officer as the leader. The FEST-A's must be ready to deploy worldwide on a rotational basis and routinely deploy to the Joint Readiness Training Center (JRTC) or the National Training Center (NTC) for training with brigade combat teams (BCTs) and/or divisions as they train for, and conduct, mission rehearsal exercises. The FEST-A's are actually expanding to table of organization and equipment (TOE) units, adding a noncommissioned officer (NCO) as well as the engineer captain, and coding civilian personnel positions to be on this team beginning in fiscal year 2008. FEST-A's provide technical reachback to USACE labs and center of engineering expertise and have embedded the following skills:

- Real estate acquisition and disposal of real property
- Facilities design and development and infrastructure planning and assessments
- Environmental engineering, including baseline environmental assessments and environmental assessments of specific host nation facilities to be used by U. S. forces
- Geospatial engineering expertise and identification of groundwater sources
- Facility force protection design and infrastructure engineering/assessment
- Hardened-target weapons-effect assessments

As a battalion commander in Iraq, I often wished I had an officer or NCO with some basic understanding of construction to assist or act as our civil affairs officer and execute our construction program within our area of responsibility. I believe that having a captain with USACE district experience would have made a difference in being able to provide a good set of plans or project specifications to the Iraqi contractors we worked with, to ensure that we got the best possible project. The basic construction skills an officer acquires from overseeing a USACE MILCON project typically includes concrete placement, concrete masonry unit (CMU) construction, and electrical and plumbing installation and would have given an officer in the battalion a tremendous level of credibility in Iraq.

Engineer officers review blueprints for a project at Fort Bliss, Texas.

Military officers bring skills to the district not normally resident in our civilian teammates. For example, recently our district was tasked to develop a "strategic" plan for Customs and Border Protection of the United States Department of Homeland Security. To accomplish this mission, we brought in several of our junior officers who were able to use their military decision-making process skills and help guide our civilian teammates through the development of this plan.

Engineer officers also bring a tremendous capability to support USACE in emergency management operations within the continental United States (CONUS). When USACE is brought in to assist the Federal Emergency Management Agency (FEMA) following natural disasters (such as hurricanes and earthquakes) or terrorist actions (such as at the World Trade Center), our officers are invaluable in their ability to assist with setting up a command and control cell, help organize operations, and assist with recovery operations. In the Fort Worth Engineer District, we expect all our officers to complete the Defense Support to Civil Authorities online course offered by United States Army North (USARNORTH) to ensure that they are prepared to support USACE activities following an emergency event.

Soldiers use a nuclear densimeter to determine soil compaction and moisture content.

An area we could improve on in USACE is training our new officers when they arrive in the district. There is a one-week course, usually in December, that each new officer attends. In addition to this course, called the District Officer Course, our officers typically attend formal training courses in negotiating, quality assurance, and contract administration. But we could do a better job of "certifying" our officers to make sure they receive the training and experiences they need to be successful. Several districts, including the Fort Worth Engineer District, are using various certification programs to help focus on developing our officers. This is a work-in-progress that other districts are working on with us to make it even better.

Ideally, the captains that are assigned to an engineer district come to us after completing a company command, but unfortunately that does not always occur. The district and the officer then have to work with the Engineer Branch and the engineer units on post to ensure that our officers are not forgotten and have the opportunity to get in the command queue. In Fort Worth, we generally expect that officers will work for us for two years, and then we try to get them to a unit for command. Because of unit rotations, this is not always possible, but the two-year stint provides a pretty good framework for us to work with. Although it often works best if the officer has already commanded a company, as mentioned previously, an officer with USACE experience is a valuable commodity in any battalion.

An assignment in USACE is a professionally rewarding experience that contributes to the Army, USACE, and the district. You will be a better officer as a result of this tour. The skills you learn and the time you take for professional advancement will ultimately contribute significantly to your development.

Colonel Martin is the 23d commander and district engineer of the United States Army Corps of Engineers, Fort Worth District. He previously commanded the 91st Engineer Battalion, the first Army engineer battalion to field the Bradley fighting vehicle and then fight it at the National Training Center and ultimately in Iraq. He is a graduate of the United States Military Academy, the Engineer Officer Basic Course, the Infantry Officer Advanced Course, Ranger School, and the United States Army War College, and he holds a master's in civil engineering from the University of Illinois.

Endnote

[1] "Who We Are," U. S. Army Corps of Engineers, "The United States Army Corps of Engineers (USACE) is made up of approximately 34,600 civilian and 650 military members." <*http://www.usace.army.mil/who/*> (accessed on 7 April 2008).

The Sun Never Sets on the USAFEG

By Colonel Dwight W. Pearson and Major Curtis L. Decker

For a time it was said that "the sun never sets on the British Empire." We believe that the same could be said of the current reach and effect of the United States Army Facility Engineer Group (USAFEG). Since 11 September 2001, the United States Army Reserve's facility engineer detachments (FEDs) and facility engineer teams (FETs) that belong to the USAFEG have provided extraordinary support to the nation. The USAFEG has deployed 55 FEDs and FETs to such locations as Uzbekistan, Afghanistan, Iraq, Djibouti, Kuwait, Qatar, Bosnia, and Kosovo. During this time, FEDs and FETs have also provided peacetime facility engineering support to locations in Alaska, Hawaii and other Pacific Islands, Germany, and Korea.

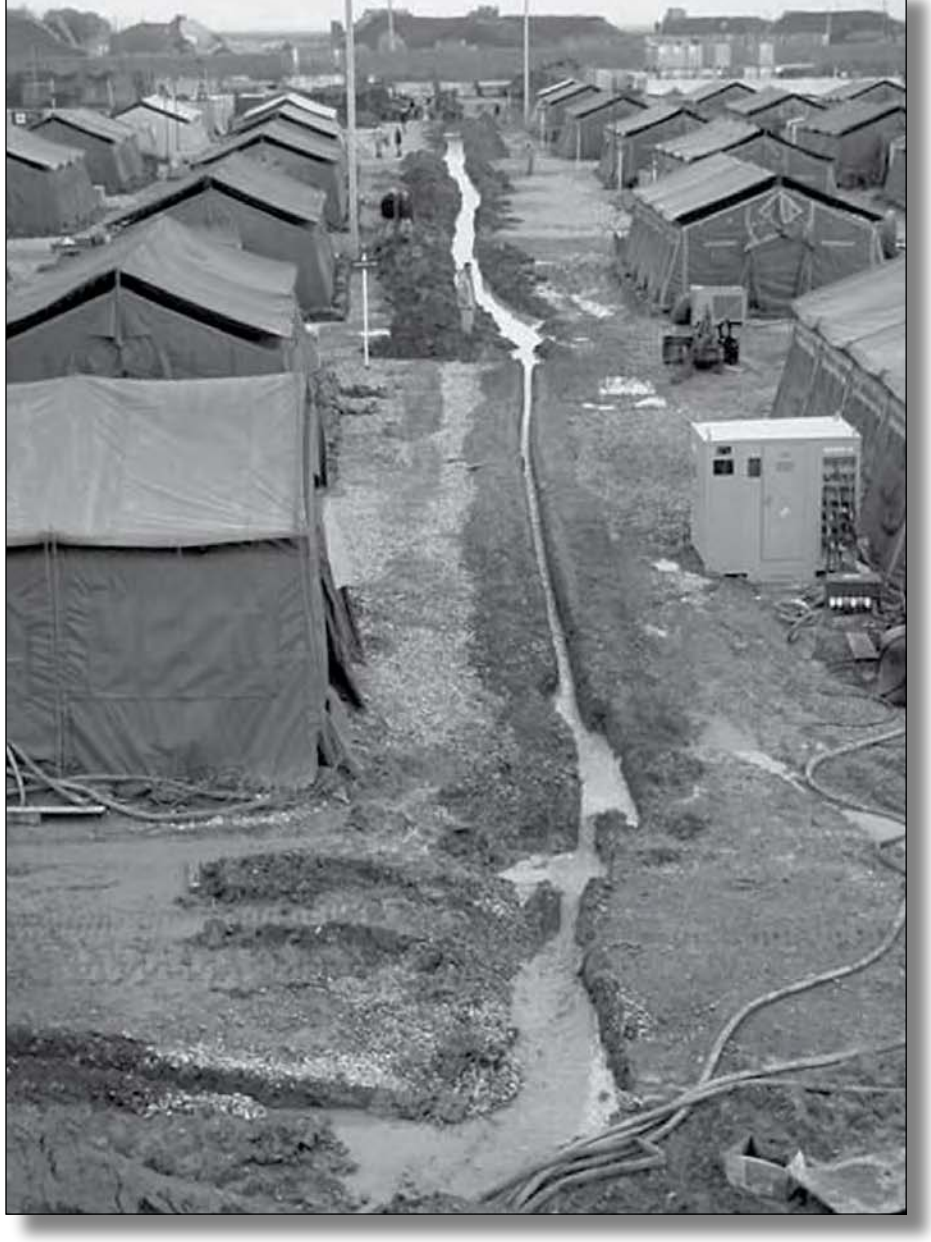
The USAFEG is composed of 16 FEDs and 30 FETs distributed across the continental United States and Puerto Rico. A detachment or team is led by an engineer lieutenant colonel and filled with highly skilled engineer officers and senior noncommissioned officers (NCOs). Our officers and NCOs

Road repair at K2 was a top priority in 2002 to improve theater logistics and airbase operations.

hold a large number of professional engineering, construction management, and environmental degrees and nearly one-third are professionally registered. A majority of our personnel work in engineering and construction fields in their civilian jobs. In theaters of operation, USAFEG Soldiers have engaged in projects ranging from helping local nationals rebuild wells to designing and overseeing airfield construction.

The detachments and teams are small, highly autonomous units that work with engineers from sister service units such as the United States Marine Corps, the United States Air Force Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE), and the United States Navy Seabees. They also work with United States Army combat engineers, the United States Army Corps of Engineers (USACE), special operations forces, and local national engineers and contractors.

Army technical engineer teams that can perform in all phases of military operations and contribute to full spectrum operations reside primarily in the Reserve Component. The USAFEG, with previous deployment experience in the Balkans, has been the major contributor of facility engineers during the War on Terrorism. The capabilities of the FEDs and FETs are unique because their personnel possess skills from their civilian experience and deploy as Soldiers when needed.



K2 initially had poor drainage that needed improvement by facility engineers.

According to a former 20th Engineer Brigade commander, the contributions of the FETs to his mission in Iraq in 2004-2005 were essential. He stated that he could not have fought without them. He marveled at the ability of these small teams to have such a great impact on the life support, base operations, command and control, and full spectrum operations of the 8,600 Soldiers under his command. He cited the ability of the teams to leverage USACE and other reachback assets to formulate technical solutions to tactical problems.

One of USAFEG's first deployments after 11 September 2001 was FET 23 to the primitive base camp at Karshi-Khanabad (also known as K2) Airbase in Uzbekistan on 8 December 2001. FET 23 became the Directorate of Public Works in support of Logistics Task Force 507 and the 10th Mountain Division. Team members developed the master plan and managed the base commander's vision for the development and construction of K2 to best support and sustain combat operations in Afghanistan. In addition, FET 23 developed the project design, statement of work, and bid package for all on-base construction in support of the expansion that would be performed by host nation contractor construction and troop labor projects. During FET 23's tour, K2 was transformed from a hastily constructed Harvest Eagle/Force Provider tent camp, without proper grading and drainage, to a developed camp with metal buildings and proper drainage. The team also increased the throughput into theater by expanding the maximum on-ground capacity for aircraft and improving runway conditions.

FET 16 had a similar impact during War on Terrorism operations while deployed to the Horn of Africa. In October 2002, FET 16 arrived at Camp Lemonier in Djibouti and, in a short period of time, quadrupled the camp's life support capacity, expanded the maximum on-ground capacity for aircraft, and coordinated with USACE to drill water wells. The well-drilling operations were essential to the continued

Well-drilling design and construction is just one of the many services provided by facility engineer detachments and teams.

goodwill of the local populace. Until this time, Camp Lemonier got its fresh water from the local economy, overtaxing the local water supply and threatening to disrupt host nation relations. When their mission was complete in Djibouti, the members of FET 16 departed for an airfield in an undisclosed location, where they planned and executed the hasty construction of a temporary base camp that was essential for close air support and insertion of special operations forces in Iraq.

In Djibouti and other areas of operation, water is a scarce resource. FED Charlie from Tennessee arrived at Tallil Airbase in southern Iraq in April 2003. Using their design and construction management skills, team members devised a plan to reestablish a damaged, nonfunctional irrigation canal to flow from the Euphrates River into a reservoir planned for the airbase. The detachment surveyed the canal and future reservoir site, designed proper slope and drainage, coordinated for multinational troop engineer support, and worked to set up water purification contracts for the reservoir. It was full of usable water by fall 2003.

In the first weeks of the Iraq conflict, FED Bravo from Puerto Rico conducted facility assessments of many Baghdad area power, water, and sewer treatment plants. The detachment also played a key role in establishing Camp Victory near Baghdad International Airport. The grid supplying power to the main palace and to the northern section of Camp Victory was severely damaged. The Puerto Rico detachment conducted utility assessments and determined electric load requirements so that prime power units could establish generator farms and USACE could establish permanent sources of power for this key operating base. The detachment also sent a team to Fallujah and improved conditions for the local populace by working with USACE and contractors to fix power, water, and sewage treatment plants in the area.

While contributions to Operation Iraqi Freedom and Operation Enduring Freedom have been significant, FEDs and FETs have continued to provide other valuable services to the nation. Detachments, teams, and individual Soldiers stand by to provide support and technical expertise in natural disasters such as Hurricane Katrina. They also provide support to major exercises in the continental United States and overseas. In the fall of 2008, a team will deploy to Bulgaria for a 60-day exercise. Also, facility engineer Soldiers are often asked to fill various interesting individual deployments and tours around the world.

The pace of support to the War on Terrorism and other exciting engineering missions continues. Soldiers who have an engineer military occupational specialty, or have relevant civilian engineering or construction management skills, will find that FEDs and FETs offer highly professional, challenging, flexible opportunities with unit locations across the country. For information about joining this dynamic organization, contact the authors.

Colonel Pearson is the commander of the United States Army Facility Engineer Group. He is a graduate of the Virginia Military Institute and the Army War College and is a registered professional engineer in Pennsylvania. In his civilian occupation, he is a civil engineer for Pittsburgh Naval Reactors at the Bettis Atomic Power Laboratory. His e-mail address is <dwight.pearson@us.army.mil>.

Major Decker is the operations officer for the United States Army Facility Engineer Group. He holds a bachelor's in civil engineering from the United States Military Academy at West Point, New York, and a master's in civil engineering from the University of Illinois at Urbana-Champaign. He is a registered professional engineer and a registered structural engineer. His e-mail address is <curtis.decker@us.army.mil>.

SO YOU WANT TO BE A COMPANY COMMANDER?

By Major John N. Carey

"Somewhere a True Believer is training to kill you. He is training with minimum food and water, in austere conditions, day and night. The only thing clean on him is his weapon. He doesn't worry about what workout to do–his rucksack weighs what it weighs, and he runs until the enemy stops chasing him. The True Believer doesn't care how hard it is; he knows he either wins or dies. He doesn't go home at 1700—he ***is*** *home. He knows only The Cause. Now, who wants to quit?"*

Special Forces Assessment and Selection Course,
Fort Bragg, North Carolina.

Collected Wisdom

This article provides straightforward, honest advice for future United States Army engineer company commanders. The company commander's battle is personal, intense, and often violent. Whether in garrison or on operations, it is never routine. This document brings together the collective experience of previous company or squadron commanders from the United States Army, United States Marine Corps, Australian Army, and British Army. The contributors have fought in Northern Ireland, Iraq, Bosnia, East Timor, Afghanistan, Solomon Islands, Kosovo, Somalia, Rwanda, and Haiti. They have done the hard yards, made some mistakes, and learned from them. Perhaps their thoughts will be useful as you prepare for command.

You are always the commander. Whether at work, in the field, at home, or on leave, you are always the commander. Everything you do or say (or do not) will be analyzed and discussed by the members of your unit. Lead by example, 24 hours a day, 7 days a week. You must push yourself to be better than everybody else by setting the example in everything from fitness, combatives, and marksmanship, to understanding tactical doctrine and current affairs. When you can, participate with the troops by getting dirty and sweaty. Morale is always high when the Soldiers see the boss out of the tactical operations center (TOC) doing physical training (PT) with the troops or helping out with a work party.

Show the essence of leadership. You provide energy, purpose, direction, motivation, and—most importantly—leadership. Have the confidence to stand alone, the courage to make tough decisions, and the compassion to listen to the needs of others. Take care of your Soldiers and their Families. Train your Soldiers to fight, yet also to do the right thing. Resource your sappers for the task you give them, and do not delude yourself by constantly asking them to "do more with less." Encourage your team to understand their role in the larger plan. Do what you can with what you have, wherever you are. After receiving guidance for a task, do not ask permission—do what needs to be done!

Always be learning for command. You should spend your staff time observing success and failure in commanders. When not in command, make sure you are an instructor so you remain close to the troops. Put away the war novels and read professional books. Read and analyze history to learn

how a Soldier thinks and acts, and you will quickly realize that counterinsurgency is not a new training event. You will see how others have achieved success with the barest of resources. You will begin to understand the importance of courage, humility, and fairness.

Learn from your unit's heritage. Keep photos, key documents, and press clippings. Foster links with organizations of retired military engineers. Do not allow yourself to inbreed by studying only Western military history. Read the classics, such as Sun Tzu, Vo Nguyen Giap, Mao Tse-tung, Sayyid Qutb, Carl von Clausewitz, T.E. Lawrence, and Basil Liddell Hart. Also read Lieutenant General Hal Moore, Guy Sajer, Lieutenant Colonel John Nagl, Robert Taber, Jim Collins, and Bruce Gudmundsson. Check out the U.S. Army Chief of Staff's professional reading list at <*http://www.history.army.mil/reference/CSAList/CSAList.htm*>, and read Field Manual (FM) 1.0, *The Army*; FM 1-02, *Operational Terms and Graphics*; FM 3.0, *Operations*; FM 3.24, *Counterinsurgency*; FM 3.34, *Engineer Operations*; and FM 5.0, *Army Planning and Orders Production*.

Talk to everyone you can. Ask your Soldiers about the strengths and weaknesses of the unit. Talk to the executive officer (XO) and first sergeant and get their honest assessments. Talk to the command sergeant major, battalion XO, and operations and training officer, and find out if there are any significant personnel issues or operational tasks coming in the next 90 days. Get a gut feel for how the current commander does business. Understand the deals that have been made, promises issued, contracts negotiated, and missions planned, because you will have to assume ownership of the outcomes. After taking command, never bad-mouth the previous commander. How would your Soldiers know that you will not do the same to them?

Get a real handover from the outgoing commander. As you get ready for the change of command, ask yourself:

- What is the personality of the unit?
- What are its quirks?
- What is the status of discipline, training, morale, and maintenance?

Think smart and not always hard. Aggressiveness and initiative are admirable qualities, but you must also think. Focus on the big picture. Do not get lost in the noise of immediate issues. There may be urgent phone calls and e-mails but spend some time thinking, postulating, and shaping the future of your unit; nobody else will do this if you don't. Develop a command philosophy that lays out your command style, intent, objectives, and priorities. Spend time thinking about this before the change of command ceremony. Recognize that your priorities will change. The baseline must be Soldier first, sapper second, and specialist third. You are there to command, but that also includes leadership and management. Leadership is required in periods of uncertainty, while management looks at the details to ensure efficiency. You cannot focus on just one—you must succeed at all three.

Be honest. When your opinion is sought, be confident, be clear, but above all be honest. Nobody respects a person who offers a view shaped by what he believes is wanted rather than that which he actually believes. Never ask someone to do something you would not do yourself. Do not be afraid to report shortfalls in capability and readiness. Never be afraid to make the hard—but legal—decisions with weak leaders. Do not tolerate bad leaders; bad leaders in peace will be bad leaders on operations. Give unsatisfactory leaders counseling, training, and guidance, but if they do not improve to the standard required, remove them.

Develop your ability to command in a tactical environment by setting your team up for success.

Work with the battalion commander. He is not just a provider of tasks but also a valuable source of experience and advice. He will enjoy discussing challenges and issues with you and your team. Keep him informed and demonstrate what you are doing with your

You provide energy, purpose, direction, motivation, and—most importantly—leadership.

command. Developing a close relationship with the battalion commander and command sergeant major will give you the confidence to approach them on any issue.

Develop an open and honest relationship with your first sergeant. The officers and noncommissioned officers (NCOs) in your unit deserve nothing less. Your unit will fail in its mission unless the commander and the first sergeant speak with the same voice. Whether you visit the troops in the field or conduct PT, your first sergeant must always be with you. Your first sergeant has risen to be the senior Soldier of the company for good reason—he can be trusted. He will think of things you have not. He will not always agree with you, but he will always back you once you've made your decision.

Know your Soldiers and demonstrate genuine concern for them. Ask your Soldiers where they come from, how many kids they have, and what they think of their training. Let Soldiers explain their trade to you so you can represent them better and make more effective decisions on their behalf. The Soldiers will suffer if the boss locks himself away in the TOC. Constant tours and two-way communication with the Soldiers, pats on the back where justified and boots in the backside when required, are mandatory. Get out from behind your desk and establish relationships with your Soldiers, or you will lack awareness of what is really happening in the unit. Never underestimate the importance of simply saying hello. There is nothing more powerful than hearing the boss say, "Hey, you are an outstanding Soldier, and I want to reenlist you in the Army."

Leave the company in better shape than you found it. It is not "your" company—you are just looking after it. Practice mission command both in garrison and on operations. Make sure your subordinates can do the job two levels up. Encourage problem-solving and supervision of tasks at the lowest practical level. Ensure that your first sergeant and senior NCOs stand up and take on big-ticket issues. Give clear commander's intent. Do not get in the habit of giving useless briefings. Properly prepared and issued orders instill discipline and confidence at all levels of command. Subordinates cannot execute mission analysis from a briefing. Give your NCOs the resources, get them to back-brief those orders formally before going on the mission, provide plenty of encouragement, and ensure that they provide a post-brief afterward.

Become a problem solver. The U.S. Army has policies on everything, and they all can be found at Army Knowledge Online. Check current policy first, and be wary of people who insist on relying on memory and are not prepared to quote a reference when asked. They may be hiding ignorance with bluff, or they may have been in the job so long they cannot be bothered to check. Tell your Soldiers early in your tenure how you intend to make decisions:

- Tell me what the problem is.
- Tell me what the policy guidance says.
- Give me options and recommendations.
- I will give you a decision.

You do not need to be an expert at everything since you will be commanding very intelligent and experienced Soldiers, and there is plenty of support available from the chain of command. At the end of the day though, do not be afraid to trust your gut. When you have 70 percent of the facts and time is short, make a decision. Just make sure you know when to stop fighting for something you believe is right. Debate your point of view until a decision is made, and then support the decision wholeheartedly.

Tell others how important engineers are to the fight. We are often very humble about our success. As an engineer

commander, you are one of the next leaders of the Regiment. You can play a much larger part in shaping its future direction than you probably realize. Ensure that you get out and sell the engineers and our broad range of capabilities. Educate your supported commanders and your peers. Some of the questions to ask yourself are—

- What do topographic engineers do?
- When was the last time you read FM 3-34, *Engineer Operations*?
- Do you understand the relationship between the breaching organization and breaching fundamentals?
- How are warrant officers integrated into construction effects battalions?
- What do United States Marine Corps, Navy Seabee, and Air Force engineers bring to the fight?
- What engineer capabilities do the Aussies, Brits, and Canadians have that I might use in-theater?

Know all the capabilities of military engineers and their effects across the full spectrum of operations.

Talk the talk and walk the walk. Work hard to develop relationships with your supported commanders. Aim to make yourself an integral part of their team. Educate them by giving them briefs that explain your role and capabilities, if necessary. When you walk into any TOC, you should know just as much about combined arms operations and warfighting philosophy as any infantry or armor officer at your level. Do you understand the maneuverist approach, targeting, effects-based operations, and the intelligence cycle? As either a staff officer or commander, always be thinking about how to promote engineers. Do small things well. Ask of any project how can it be done better. Strive for self-improvement through constant self-evaluation—of both your unit and yourself as an engineer officer.

Communications are the key. With so much done by computers, e-mails, Blackberrys, conferences, and committees, make sure you get around to your team, listen, and then talk to them. Determine who will tell you the truth about the company and form good relationships with them. Talk to the chaplain, medical officer, supply staff, and unit mechanics. Walking around with a cup of coffee is a great approach. Face-to-face contact is best, followed by radio or telephone, and finally by written communication. You can always tell by the look in someone's eye or the tone of someone's voice if the person got your message. Ask yourself which form of communication you would prefer with your boss while in the fight—an impersonal e-mail or a calm face and reassuring voice.

Maintain a healthy ego but keep it in check. Your company might be the best in the battalion, but there is no need to rub it in the faces of the other company commanders. Be passionate but humble. You are part of a team, and you need to look after and assist each other. In all forms of communication, use "we" more than "me, myself, and I," unless you are expressing your intent or taking responsibility. When talking to other Soldiers, spouses, partners, or anyone else, it is more respectful to use the phrase, "I work with Private X," rather than, "Private X works for me." Respect is a two-way street.

Work to maintain readiness. Do not underestimate how much work is involved in that task; understand Army systems, check, then keep rechecking. Constantly prepare your personnel for operations, establish readiness procedures, and practice call-outs. Train as you fight, and fight as you train. Whether you are fighting in Belfast, Dili, or Baghdad, or just "shooting the breeze" in the United States, you are always training your Soldiers. Engineers must maintain both technical engineer and military skills. If you neglect either of these, you will be irrelevant to the fight. A tool some commanders use is to color-code the training program; green for engineer skills training, red for military skills. You will quickly see how the balance looks and where your gaps exist. Remember, military engineers are thinking Soldiers and thinking Soldiers need rest. Attempt to achieve the required task to operational standards at the least cost to your men. After 15 months in Mosul or Darfur, you will value the personal reserves this will create.

Care for your unit's personnel and equipment. Good units do routine things routinely—find a way to make maintenance and supply a part of your weekly battle cycle and protect their importance. Equipment care is vital because it underpins operational success. As a commander, you will be unable to get involved in the plethora of detail on equipment care, but your subordinates must understand its importance and that you take it seriously. Early in your tenure, seek out key people in the battalion who can assist you. Act quickly to resolve the issues that affect your people, especially areas of pay, housing, and medical care. Learn about the capabilities of the information systems in your unit. Before you get frustrated with your subordinates, understand what they are dealing with. Assist them by telling the chain of command what the problems are and look for ways to fix them.

Be brilliant at the basics. Always maintain an operational focus. With 2,000 years of example behind us, we have no excuse for not understanding how to fight the "Three-Block War." Develop your ability to command in a tactical environment by setting your team up for success. At the company level, practice the military decision-making process. Ensure that your platoon leaders use troop-leading procedures (TLP). Write operations orders both in garrison and on operations. Get out with your lieutenants and NCOs; go on terrain walks; conduct tactical exercises without troops (TEWTs); read and discuss controversial articles; discuss current affairs, technical procedures, doctrine, and the military art. When visiting Soldiers in the field, help them focus on the way they communicate; for instance, sappers do not "blow stuff up," they attack targets. Know your weapons and communications systems and how to employ them to

best effect. Marksmanship, PT, first aid, communications, navigation, and battle drills are essential for survival. Do you and your Soldiers know how to operate every weapon in the company? Does your company execute full spectrum PT—aerobic, anaerobic, battle, confidence, obstacles, ropes, rifle, games, competitions, and team sports? Do your Soldiers know how to navigate using both a compass and a global positioning system? Do your Soldiers know how to organize a casualty evacuation?

Never underestimate the need for technical control. An engineer mission will fail if it is not technically correct. Signs of a possible decline in engineer technical competence include—

- The United States Army Corps of Engineers (USACE) response in the aftermath of Hurricane Katrina.
- Comments from senior military engineer leaders regarding engineer support to the War on Terrorism.
- Increased emphasis from senior leaders on construction engineering tasks because of stability operations and lack of technical competence within USACE.
- The failure of the current engineer force structure to facilitate senior engineer mentoring of junior engineer officers.
- Known decreases in military engineering developmental assignments.
- A shift toward a mobility and countermobility mentality in the Engineer Regiment.

The Chief of Engineers has asked the commandant of the United States Army Engineer School to lead further investigation and resolution of the decline, and company commanders can help. Technical control can cross boundaries if you plan and specify it in orders—be smart and use the network and people available. If you are a civil engineer, get your professional engineering license.

Ensure that your Soldiers complete technical courses at the USACE Learning Center at Huntsville, Alabama; USACE Protective Design Center at Omaha, Nebraska; and the United States Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio. Ensure that our technical skill base is being preserved and not degraded by workloads that are repetitive in a narrow skills band or are non-engineer tasks. Write about your experiences in professional publications. Examine how your allies support general engineering. Seek reachback solutions from industry and the Corps. Get involved in the Society of American Military Engineers, industry, and other relevant professional associations. Use civil detachments and two-way exchanges, which are normally cheap and effective training. Ensure that these organizations understand you and your role. Prepare a simple memorandum of understanding to cover both the Army and the organization.

Look after Families. We cannot do without the support of our Families. Soldiers cannot keep their minds on the job and be effective if there are problems at home. Keep Families informed, and know how the Family Readiness Group works. Make sure you program stand-downs to coincide with school vacation to give partners a break from looking after the kids on their own. Socialize and get to know the Families and friends of the company. Write letters to parents telling them how well their son or daughter is doing in the unit. Conduct briefings and open days for Families. Do everything you can to support Families, but develop a thick skin too. Nothing will ever be enough for some, and you can never please everyone, particularly the vocal minority. Do not let this get you down or deter you from doing your best for all Families.

Conclusion

You have been deployed to Iraq and/or Afghanistan not just twice but three times. You have been a platoon leader in combat and have spent some time as a fighting XO. You have seen company commanders come and go. Some were studs and others were not so good. You have read The Challenge of Command *by Roger H. Nye,* Small Unit Leadership *by Dandridge M. Malone, and* Company Commander *by Charles Brown MacDonald. You have completed the Engineer Captains Career Course and the Sapper Leader Course. You are studying Arabic, Farsi, or Pashto because you know that you are engaged in a "Long War." You've spent the last few years building the skills, experience, and judgment that you believe are critical for successful company command. Are you ready to take up the guidon?*

Acknowledgements

The author would like to thank the following professional warfighters from around the world who provided input or feedback for this article: Brigadier General Gregg Martin, United States Army (USA); Brigadier General John Sterling (USA); Brigadier Steve Day, Royal Australian Engineers (RAE); Colonel Andy Phillips, Royal Engineers (RE); Colonel Marcus Fielding (RAE); Colonel Bill Thomson (RAE); Colonel David Stephens (RE); Colonel Glenn Stockton (RAE); Colonel Jerry Meyer (USA); Lieutenant Colonel Carlos Perez (USA); Major Keith Kramer (USA); Major Jeremy Jeffery (USA); and Captain Christopher Haar, United States Marine Corps. Special thanks to Major Declan Ellis (RAE) for developing the very first *Thoughts on Engineer Command* in 2003 in Australia. Some of that material was included in the article.

Major Carey, a member of the Australian Army, is the Division Chief, Engineer Captains Career Course, at the United States Army Engineer School, Fort Leonard Wood, Missouri.

Reorganizing the DPW in Iraq

By Lieutenant Colonel Gregory B. Kniesler

It was anticipated in 2005 that if U.S. forces remained in Iraq, they would occupy four large contingency operations bases (COBs). This assumption lead to the sourcing of four facility engineer teams (FETs) to supplement the anticipated Directorate of Public Works (DPW) cells of mayor's sections created from the respective area support groups. By late 2007, U.S. forces had more than 50 bases throughout Iraq, some of them exceeding the concept of a COB, and all requiring more facilities engineering expertise than was available.

DPW Challenges

While each base is slightly different, Logistical Support Area (LSA) Anaconda will serve as an example. The mayor's section—an ad hoc unit responsible for the administration of the base—has a DPW cell consisting of three officers, supported by a FET, which is responsible for the management of a COB with the population of a small city. The challenges facing this team are—

- Delivery of utilities.
- Planning for the growth of new programs.
- Competing interests for real estate.
- Improvements to quality of life.
- Quality of contract construction.

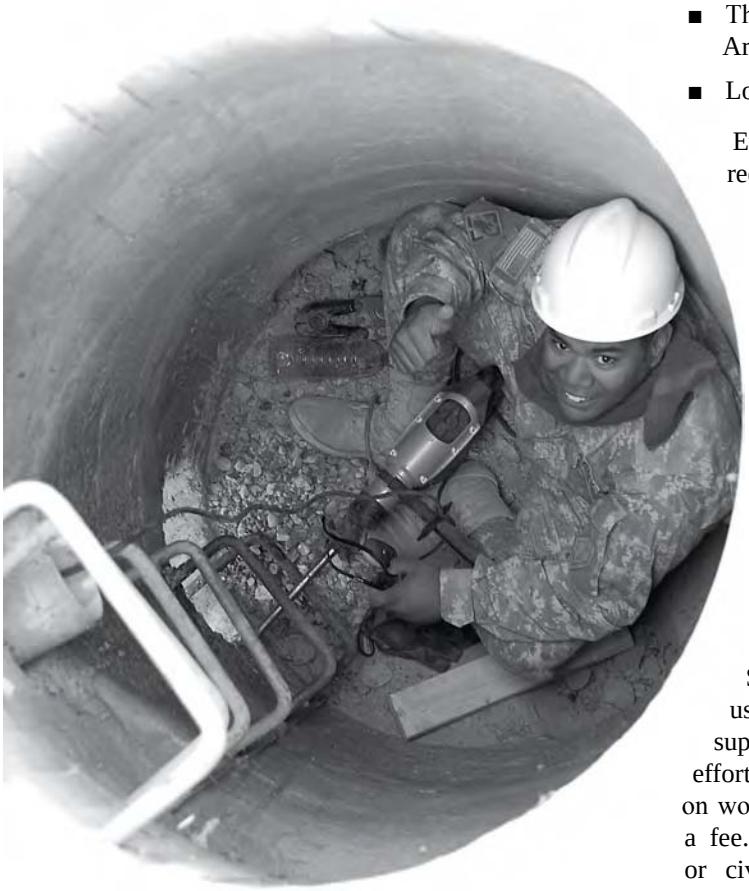
Working closely with this team are—

- KBR, the Logistics Civil Augmentation Program (LOGCAP) operations and maintenance contractor.
- The Gulf Region Division office of the United States Army Corps of Engineers (USACE).
- Local contractors.

Even with these enablers, the staff is challenged by the requirements of running the facility.

The FET has been assigned to provide master planning support and develop and execute construction projects for the COB tenant units and organizations. The FET has some design capability and provides expertise in facilities engineering and construction management. However, there are many more locations in-country that need FET assistance with everything from drainage issues to building design such as ammunition holding and transfer point placement and construction.

The LOGCAP contract provides the basis for obtaining critical logistic and life sustainment services in the operational environment. This is a proven concept and has reduced the number of Soldiers providing logistics, enabling the Army to use its personnel for combat power and direct combat support roles. It should be remembered, however, that this effort is a contract and the purpose of any business bidding on work is to make a profit. KBR provides its services for a fee. The government's representative, whether military or civilian, should know the facilities operations and management business just as well as the contractor to ensure the implementation of the most efficient solution that meets



A Soldier modifies a manhole to add to an existing drainage system to accommodate the COB's expanding needs.

mission requirements. Independent government estimates and engineering designs should be developed by experienced engineers who know the facilities business. Contract oversight is still required by the customer to ensure that services are delivered.

Long-Term Solutions Required

Since U.S. forces were working in a tactical environment, originally it was believed that long-term solutions were not required. The relatively short deployment cycles of Army and Air Force DPW units helped perpetuate that outlook. Those cycles focused on providing immediate needs and responding to the tactical fight, rather than planning for future requirements. The long-term focus has been provided by the Multinational Corps–Iraq (MNC-I) engineer staff (C7) in the development of some military construction (MILCON) projects such as power plants and incinerators. The result of this is a lack of focus on some installation-level infrastructure concerns such as water distribution, storm water management, and other issues that require a longer-term approach to design and construction.

Unmarked buried utilities create a challenge for trenching operations during base improvements.

I believe that the cause of these problems is the lack of a professional DPW staff that is sized appropriately for the COB population. The Army should provide a phased approach to a civilian DPW with a military director. This approach would be no different from the evolution of support in Bosnia or for the bases in Kuwait. Early in the Iraq War, FETs were deployed to Kuwait as the DPW cell for bases there, and that support was phased out by Army Central Command as those bases evolved. The target for implementation of the phased plan in Iraq should be fiscal year 2009, which would correspond to the current FET deployments. This DPW organization could work for either the theater engineer or the corps support command.

The initial step is for the FET and mayor's section to hire civilian engineers (either vetted local nationals or expatriates) to augment the DPW workforce. The hiring of local nationals could provide a secure environment for professionals to return to Iraq with opportunities for long-term employment. Positions required would include construction management professionals and design engineers of all disciplines. This would facilitate improvement of services on those COBs that have FETs, allowing for a complete implementation of the current plan to have the FETs provide services in general support to the support command and multinational divisions. By thickening the engineer force with additional workers, Army and Air Force engineers could leave the COB work to a civilian workforce and focus their own efforts on the more remote forward operating bases (FOBs) and combat outposts that need engineering assistance.

The follow-on organization should be developed by the theater engineer and Army Central Command to manage this high-cost area of infrastructure support. A Directorate of Facilities Engineering-Iraq, headed by a colonel and charged with management of the COBs in Iraq, should be established. Initially, this could be an expanded engineering and reconstruction (G7) section of the corps support command, providing logistics support to the major COBs.

"The LOGCAP contract provides the basis for obtaining critical logistic and life sustainment services in the operational environment."

This management task should include authority for the operations and maintenance budget, which would provide central management, command emphasis, and visibility of the costs associated with the COBs. In addition, this new directorate should be the conduit of good ideas from one COB to another and the repository of successful statements of work for service contracts. The force structure would include officers who would report to the directorate but work for each COB. These officers would manage a civilian DPW organization consisting of Department of the Army civilians and contractors (or local national workers, as appropriate).

(continued on page 76)

ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center
Training and Doctrine Development Department
Doctrine Division, Engineer Branch

Publications Currently Under Revision

Publication Number	Title	Date	Description (and Current Status)
FM 3-34	*Engineer Operations*	10 Mar 03	This is the engineer keystone manual. It encompasses all engineer doctrine; integrates the three engineer functions of combat, general, and geospatial engineering; and addresses engineer operations across the entire spectrum of operations. **Revision Highlights**: Modular engineer force (MEF), warfighting functions, explosive ordnance clearance agent (EOCA), and the maneuver enhancement brigade (MEB). **Status**: Under revision in FY 08.
FM 3-34.22 (FM 3-34.221) (FM 5-71-2) (FM 5-71-3) (FM 5-7-30)	*Engineer Operations – Brigade Combat Team and Below*	Pending (Jan 05) (Jun 96) (Oct 95) (Dec 94)	This new manual will encompass engineer operations in support of brigade combat teams (BCTs) (heavy, infantry, and Stryker–the armored cavalry regiment) and their primary subordinate units (infantry battalion, Stryker battalion, combined arms battalion, and the reconnaissance squadron). This manual will supersede FM 3-34.221, FM 5-7-30, FM 5-71-2, and FM 5-71-3. **Revision highlights**: MEF and warfighting functions. **Status**: Preparing the approved final draft for staffing.
FM 3-34.23 (FM 5-116) (FM 5-100-15) (FM 5-71-100)	*Engineer Operations – Echelons Above Brigade Combat Team*	Pending (Feb 99) (Jun 95) (Apr 93)	This is a new manual that will encompass engineer operations in support of all engineer operations above the BCTs (division, corps, and echelons above corps). The intent is to consolidate and revise three engineer FMs that provide doctrinal guidance for the entire spectrum of engineer operations supporting echelons above the BCT level. This manual will supersede FM 5-71-100, FM 5-100-15, and FM 5-116. **Revision Highlights:** MEF, warfighting functions, and MEB considerations. **Status**: Preparing the initial draft for staffing.
Combat Engineering			
FM 3-90.11 (FM 3-34.2)	*Combined Arms Mobility Operations*	Aug 00	This is a full revision, to include renaming and renumbering of FM 3-34.2, *Combined Arms Breaching Operations.* Changes in the force structure have required adjustment of the tactics, techniques, and procedures (TTP) associated with breaching and clearance operations. **Revision Highlights**: MEF, five areas of mobility (breaching, clearing, gap crossing, combat roads and trails, forward aviation combat engineering [FACE]), improvised explosive devices (IEDs), urban breaching, and warfighting functions. **Status:** In final draft
FM 3-90.12 (FM 90-13)	*Combined Arms Gap Crossing Operations*	Jan 98	This is a full revision, to include renaming and renumbering of FM 90-13/ MCRP 3-17.1, *River Crossing Operations*. This manual is and will continue to be a dual-designated manual with the Marine Corps. Changes in the force structure have required that the TTP associated with river crossing be adjusted. The revised manual incorporates considerations for all gap crossing operations, not just river crossings.

ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center
Training and Doctrine Development Department
Doctrine Division, Engineer Branch

Publication Number	Title	Date	Description (and Current Status)
Combat Engineering (continued)			
FM 3-90.12 (FM 90-13)	*Combined Arms Gap Crossing Operations (continued)*	Jan 98	**Revision Highlights***:* MEF, engineer reconnaissance, gap crossing definitions, and warfighting functions. **Status***:* The estimated posting to Army Knowledge Online (AKO) is Summer 2008.
FM 3-90.13 (FM 5-102) (FM 90-7)	*Combined Arms Obstacle Integration*	Sep 94; Mar 85	This revised manual will contain the fundamentals associated with countermobility operations and will incorporate aspects of the contemporary operating environment (COE). **Revision Highlights:** MEF, warfighting functions, and intelligent munitions. **Status:** Preparing program directive and initial draft.
FM 3-34.170 (FM 5-170)	*Engineer Reconnaissance*	May 98	This manual provides doctrinal guidance for engineer reconnaissance across the full spectrum of operations. It encompasses engineer reconnaissance in support of tactical operations, as well as engineer technical reconnaissance support, and introduces infrastructure reconnaissance **Revision Highlights**: Introduces infrastructure reconnaissance (assessment and survey), environmental reconnaissance (assessment and survey), engineer reconnaissance teams, field force engineering (FFE), and other reachback mechanisms. **Status**: Recently published on AKO.
FM 3-34.300 (FM 5-103)	*Survivability*	Jun 85	This manual provides survivability information needed by commanders and staff at the tactical level. It includes guidance on integrating survivability into planning and order production and creation of the engineer running estimate. It provides examples of a survivability capabilities card, matrix, and timeline to assist with the planning, revision, and conduct of specific survivability tasks. **Revision Highlights:** Protection, hardening, antiterrorism considerations, and warfighting functions. **Status:** On hold for release of FM 3-10**.**
FM 3-34.281 (FM 20-11)	*Military Diving*	Jan 99	This manual, formerly an adaptation of the Navy diving manual, will support one of the modular units of the MEF. Within the Army, it is used by special operations forces, as well as engineer divers. **Revision Highlights:** The entire Navy diving manual will not be adopted; instead, the targeted sections applying to Army diving use will be adopted with other Army-specific considerations being added. **Status:** Developing the program directive.
General Engineering			
FM 3-34.400 (FM 5-104)	*General Engineering*	Nov 86	This manual describes the operational environment (OE) and how to apply and integrate general engineering principals in support of full spectrum operations. It focuses on the establishment and maintenance of lines of communications and engineer support to sustainment operations throughout the area of operation. Although not designated as a multi-Service publication, it is intended to inform all Service components of the types of general engineering tasks, planning considerations, the variety of units available to perform them, and the capabilities of Army engineers to accomplish them.

ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center
Training and Doctrine Development Department
Doctrine Division, Engineer Branch

Publication Number	Title	Date	Description (and Current Status)
General Engineering (continued)			
FM 3-34.400 (FM 5-104)	*General Engineering (continued)*	Nov 86	**Revision Highlights:** Infrastructure reconnaissance, FFE (reachback), homeland support, MEF, and warfighting functions. **Status:** Estimated posting to AKO is Summer 2008.
FM 3-34.410 Volumes I & II (FM 5-430-00-1 & 5-430-00-2)	*Design of Theater of Operations Roads, Airfields, and Helipads*	Aug 94; Sep 94	This manual will serve as a reference for engineer planners in support of joint and theater operations in the design of roads, airfields, and helipads. This manual is currently dual-designated with the Air Force. The Navy plans to adopt it as well. **Revision Highlights:** This is a collaborative effort with the Engineer Research and Development Center (ERDC) and the U.S. Army Corps of Engineers (USACE) Transportation Center of Excellence (Omaha), Air Force, Air Force Civil Engineering Support Agency (AFCESA), and the Navy. It includes the newest technologies, current practices, and revision of formulas. **Status:** Staffing the program directive and developing the initial draft.
FM 3-34.428 (FM 5-424)	*Theater of Operations Electrical Systems*	Jun 97	This manual is a reference and training guide for engineer personnel responsible for planning and executing theater of operations (TO) construction. It provides practical information for military personnel in the design, layout, installation, and maintenance of exterior and interior electrical wiring, and power-generation and distribution systems. **Revision Highlights**: This manual needs to be revised to make it more comprehensive and includes more details on tactical power generation below prime power, power distribution, the newest technologies, and current practices in the deployed environments. **Status**: Developing the program directive.
FM 3-34.451 (FM 5-472)	*Materials Testing*	Dec 92	This manual will provide technical information for obtaining samples and performing engineering tests and calculations on soils, bituminous paving mixtures, and concrete. For use in military construction. The test procedures and terminology will conform to the latest methods and specifications of the American Society for Testing and Materials (ASTM), the American Concrete Institute (ACI), and the Portland Cement Association (PCA), with alternate field testing methods and sampling techniques when complete lab facilities are unavailable or impractical to use. **Revision highlights:** It is a collaborative effort with ERDC and USACE Transportation Center of Excellence (Omaha), the Air Force, AFCESA, and the Navy. Newest technologies, current practices, and revision of formulas. **Status**: Staffing the program directive and developing the initial draft.
FM 3-34.465 (FM 3-34.465 & FM 3-34.468)	*Quarry Operations*	Mar 05; Dec 03 (Apr 94)	This manual outlines the methods and procedures used in the exploration for and operation of pits and quarries. It provides information on equipment required for operating pits and quarries and for supplying crushed mineral products, but does not cover the operation of the stated types of equipment. **Revision Highlights:** This manual outlines the methods and procedures used in the exploration for and operation of pits and quarries. It provides information on equipment required for operating pits and quarries and for supplying crushed mineral products, but does not cover the operation of the stated types of equipment. **Status:** Staffing the program directive and initiating development of the initial draft.

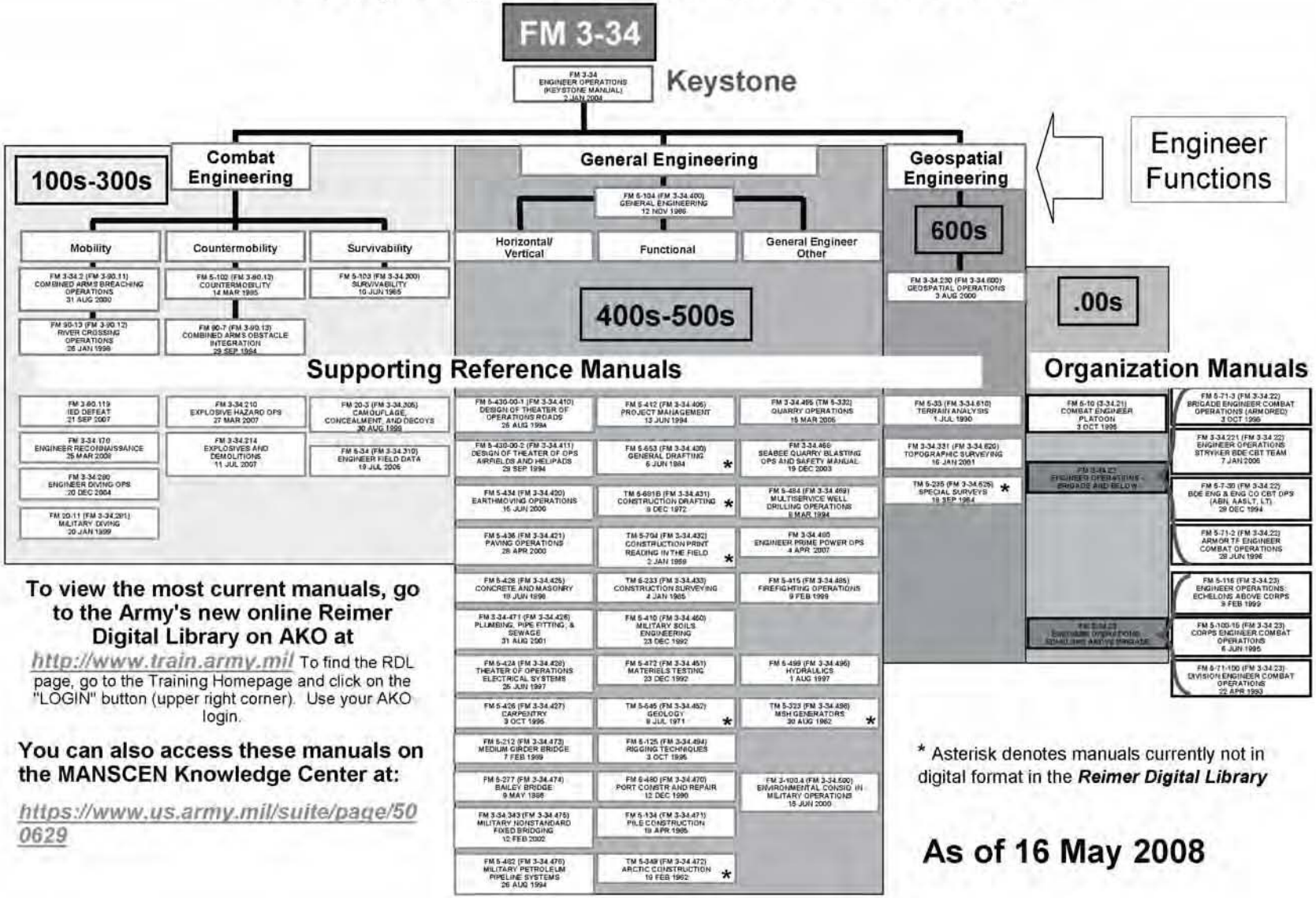
ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center
Training and Doctrine Development Department
Doctrine Division, Engineer Branch

Publication Number	Title	Date	Description (and Current Status)
General Engineering (continued)			
FM 3-34.469 (FM 5-484)	*Multi-Service Well Drilling Operations*	Mar 94	This manual is a guide for planning, designing, and drilling wells. It focuses on techniques and procedures for installing wells and includes expedient methods for digging shallow water wells, such as hand-dug wells. **Revision Highlights:** This collaborative effort with the Navy, and possible Air Force participation, includes the newest technologies, current practices, and revised formulas. **Status:** Staffing the program directive and developing initial draft.
FM 3-34.485 (FM 5-415)	*Firefighting Operations*	Feb 99	This manual gives directions on deploying and using engineer firefighting teams. These teams provide fire prevention/protection, aircraft crash/rescue, natural cover, and hazardous material (HAZMAT) (incident) responses within a TO. **Revision Highlights**: This is a parallel effort with the revision of the firefighting Army regulation (AR) to bring both policy and doctrine current with required certifications, newest technologies, and current practices. **Status**: Initiating the program directive and developing the initial draft.
FM 3-34.500 (FM 3-100.4)	*Environmental Considerations in Military Operations*	Jun 00	This manual provides environmental protection procedures during all types of operations. It states the purposes of military environmental protection, a description of legal requirements, and a summary of current military programs. It also describes how to apply risk management methods to identify actions that may harm the environment and appropriate steps to prevent or mitigate damage. **Revision Highlights**: The revision will contain information and lessons learned from current operations. It will continue to be a dual-designated manual with Marine Corps involvement. **Status:** Editing the final electronic file, then perform quality control; forward to Combined Arms Doctrine Directorate (CADD), with an estimated posting to AKO as Fall 2008.
Geospatial Engineering			
FM 3-34.600 (FM 3-34-230)	*Geospatial Operations*	3 Aug 00	This full revision of FM 3-34.230, *Geospatial Operations*, will incorporate changes as a result of FM 3-34, *Engineer Operations*, and FM 3-0 *Operations*. Geospatial engineering consists of those engineer capabilities and activities that contribute to a clear understanding of the physical environment by providing geospatial information and service to commanders and staffs. **Revision Highlights:** Terrain analysis; terrain geospatial data management; baseline survey data; identification of significant cultural sites and natural resources and force bed-down analysis. **Status:** Doctrine development contract awarded; initiating program directive.

NOTE: All current engineer publications can be accessed and downloaded in electronic format from the Reimer Digital Library at <*http://www.adtdl.army.mil/*>or the Engineer Doctrine MSKN website at <*https://www.us.army.mil/suite/page/500629*>. The manuals discussed in this article are currently under development. Drafts may be obtained during the staffing process or by contacting the engineer doctrine branch at <*jeffery.beacham@us.army.mil*>. The development status of these manuals was current as of 28 May 2008.

Army Engineer Publications Hierarchy



To view the most current manuals, go to the Army's new online Reimer Digital Library on AKO at

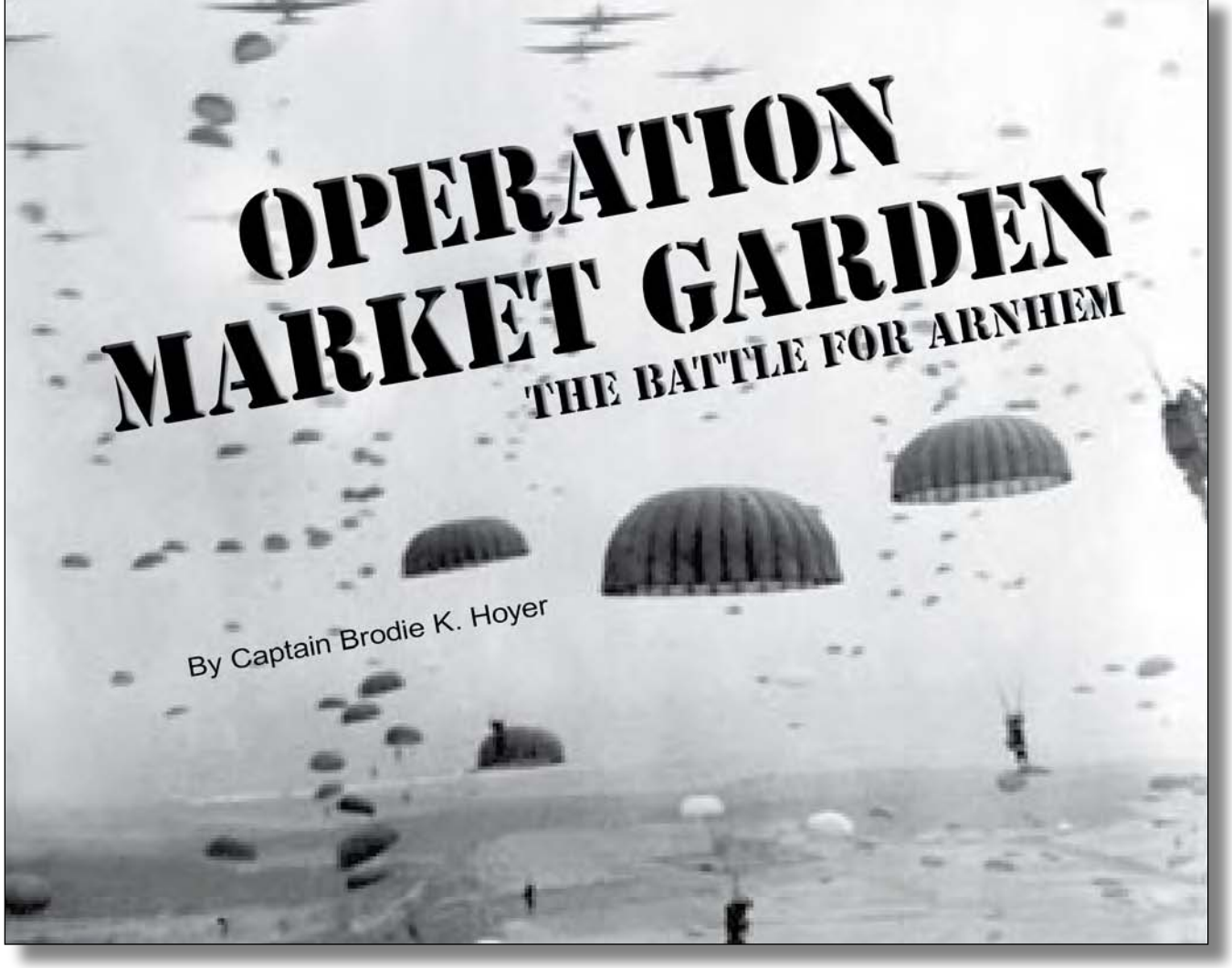
http://www.train.army.mil To find the RDL page, go to the Training Homepage and click on the "LOGIN" button (upper right corner). Use your AKO login.

You can also access these manuals on the MANSCEN Knowledge Center at:

https://www.us.army.mil/suite/page/500629

* Asterisk denotes manuals currently not in digital format in the ***Reimer Digital Library***

As of 16 May 2008



Each session of the Engineer Captain's Career Course (ECCC) is required to write an article analyzing a historical battle, and the best overall professional article receives the Thomas Jefferson Writing Excellence Award. This article was judged the best article of ECCC 4-07.

For the paratroopers of Lieutenant Colonel (LTC) John Frost's 2d Parachute Battalion, success in Operation Market Garden must have seemed almost inevitable. After an unopposed daylight jump, they were greeted in the Dutch village of Heavedorp—not by German opposition but by throngs of civilians who paraded them through the streets as liberators. Despite this auspicious beginning, LTC Frost and his entire battalion would be lost within three days and the remainder of the British 1st Airborne Division would be forced into a desperate retreat back across the Rhine River.

Operation Market Garden was a World War II attempt by Allied airborne and ground troops to capture a series of bridges over Dutch waterways in order to open a way across the Rhine River into the Ruhr Valley, Germany's industrial heartland. It was the largest airborne operation of the war and the costliest. The British assault on the Dutch town of Arnhem was the biggest failure of the operation because the British landed too far from their targets and German defenses were much stronger than expected. Of the 10,000 British airborne troops who landed around Arnhem, 1,130 were killed and 6,450 were captured.[1]

Battle for Arnhem

The battle for Arnhem (17-26 September 1944) was fought between the 1st Airborne Division under the command of Major General (MG) R.E. Urquhart and hastily formed elements of the German *Kampfgruppe* (KG) (or Task Force) *Hohenstauffen*, commanded by LTC Walther Harzer. The outcome of the battle was unexpected, primarily because of the original comparison of forces. The 1st Airborne Division was a fully manned division, comprising three British airborne brigades, an airlanding brigade, and a Polish parachute brigade in reserve. KG *Hohenstauffen* was a division on paper only, with a true strength of little over 3,500 men.[2] In reality, it was the battle-worn remnants of the 9th Schutzstaffel (SS) Panzer Division *Hohenstauffen*.

There were several reasons for the stunning defeat.

- The British forces were unable to achieve surprise and concentration early in the battle, allowing the German defenders to set the tempo of the battle.
- MG Urquhart, commander of the British division, lost command and control of the battle at a very crucial point.

- The Germans, because of the experience of their commander, were able to correctly identify and attack the airborne force's center of gravity.

First Key Event

The first key event in this battle—the fact that the British first wave consisted of only half of the 1st Airborne Division and was forced to land 7 to 9 kilometers from Arnhem—emphasizes the importance of concentration and surprise to an offensive. Field Manual (FM) 3-0, *Operations*, defines four characteristics of offensive operations:[3]

- Surprise
- Concentration
- Tempo
- Audacity

It states that *surprise* is achieved by attacking at a time or place or in a manner for which the enemy is unprepared and cautions that tactical surprise is fleeting and must be exploited before the enemy can react.[4] *Concentration* is "the massing of overwhelming effects of combat power to achieve a single purpose."[5] In addressing *tempo*, the FM states that "a faster tempo allows attackers to disrupt enemy defenses quicker than the enemy can respond."[6] *Audacity* "is a simple plan of action, boldly executed."[7]

Causes. The causes of this first key event lie primarily in the planning of the operation. From the outset, Allied air forces did not have sufficient gliders and transport aircraft to move the entire division in one lift. This deficiency was compounded by the fact that the division was forced to give up a battalion's worth of lift assets in order to tow elements of the corps headquarters, a force whose presence at the front was largely unnecessary.[8] In an effort to allay the shortage of aircraft, commanders from all the divisions involved suggested that two troop lifts be performed on the first day, thus doubling the initial troop strengths. However, the Allied air transport commander, United States Army Air Force (USAAF) MG Paul Williams, refused, claiming that his air crews would be exhausted and that his ground crews would need time to repair the damage he expected the aircraft to suffer during the first landings.[9] USAAF concerns also forced the landings to more distant drop zones (DZs) and landing zones (LZs) since it was feared that zones nearer to Arnhem would expose the transports to German antiaircraft (AA) fire.[10]

The multilift concept of Operation Market Garden did not simply mean that MG Urquhart had fewer forces on the ground. Because the lifts would be accomplished over several days, it was necessary for the 1st Airlanding Brigade under BG Philip Hicks to secure the DZs/LZs in the interim to prevent German counterattacks against vulnerable landing forces.[11] Thus, of four brigades under his command, MG Urquhart's initial attacking force consisted of only the 1st Parachute Brigade under BG Gerald Lathbury.[12] By dividing an already diminished force, MG Urquhart had effectively sacrificed his ability to concentrate forces toward the attack into Arnhem. This would prove especially detrimental since poor weather at the departure airfields would delay the landing of the British second wave by almost nine hours, [13] and would ground MG Stanislaw Sosabowski's Polish Parachute Brigade for two days.[14]

Had it not been for the great distances between the DZs/LZs and Arnhem, it might have been possible for MG Urquhart to overcome his initial lack of forces by moving swiftly into the city and securing defensive positions around the bridge. By all accounts, the German defenders were not expecting an airborne operation at Arnhem. As the first wave landed, LTC Harzer was

Photo courtesy of the Imperial War Museum, London No. BU 001144

Soldiers of the 1st Airlanding Brigade take up positions on the outskirts of Arnhem on 18 September 1944. The Soldier on the left is manning a British antitank weapon, a Projector, Infantry, Antitank (PIAT).

attending a military parade,[15] while Captain (CPT) Sepp Krafft and his SS training battalion—which would quickly become the cornerstone of the German defense—were merely conducting training exercises west of Arnhem. [16]

Unfortunately, the distance between the DZs/LZs and Arnhem, combined with the fact that most of his forces were dismounted, prevented MG Urquhart from properly exploiting the initial surprise of the attack. By the time the battalions of 1st Parachute Brigade were formed and ready to move, CPT Krafft had already placed two of his companies into hasty defensive positions and called up his third company as a reserve.[17] This would prove crucial since his blocking position would blunt the advance of both 1st and 3d Parachute Battalions, giving the Germans time to reinforce Arnhem and control the tempo of the battle to their advantage.

Photo courtesy of the Imperial War Museum, London No. BU 001091.

British Soldiers march with their vehicles and equipment along a road toward Arnhem.

Lesson Learned. The lesson to be drawn from this event is that the attacking force must immediately seize the initiative, set a faster tempo in the battle, and keep the defender off guard for an offensive operation to be successful. Failure to do so will give the defender an opportunity to slow the tempo, improve their defenses, and redistribute combat power to the points of attack. Attacking forces can gain the initiative by achieving surprise and massing combat power quickly against key defensive points.

Second Key Event

The 1st Airborne Division's inability to attain surprise was further hampered by a second key event: documents detailing the 101st Airborne Division's orders for Operation Market (the airborne portion of Operation Market Garden) were recovered by the Germans and delivered to General (GEN) Kurt Student's headquarters.[18] Beyond the obvious operations security (OPSEC) implications, this event and GEN Student's swift reaction emphasized the importance of identifying and attacking an enemy's center of gravity to achieve victory. FM 3-0, in discussing operational design, defines a center of gravity as "those characteristics, capabilities, or localities from which a military force derives its freedom of action, physical strength, or will to fight."[19] Moreover, it states that identifying and neutralizing an enemy's center of gravity is the "most direct path to victory." [20]

Cause. The cause of this event was simply a blatant OPSEC violation. The documents were discovered on the body of an American officer whose glider had been shot down near GEN Student's headquarters in Vught.[21] Although the documents did not include any information on the 1st Airborne Division's mission, GEN Student was able to combine the information from them with the reports he had received on the landings to determine that the bridges were the Allied objectives. The capture of this information would prove especially catastrophic for the Allies because of GEN Student's experience in leading German airborne operations in Italy and Holland.[22] He knew that an airborne force's center of gravity lay in its ability to strike quickly and exploit the element of surprise to secure objectives. He also understood that airborne forces had two inherent vulnerabilities: They would be comparatively lightly equipped and would have no established lines of communication, relying instead on aerial resupply and reinforcement. His defensive plan was thus based on two objectives: slow the British forces until KG *Hohenstauffen* could be reinforced with more men and heavier armaments, and seize the British DZs/LZs to interdict aerial resupply and reinforcement.

In order to wage an effective defense, it was first necessary for the Germans to organize several disparate company-size

Photo courtesy of the Imperial War Museum, London No. HU 002129

British prisoners march away under guard of their German captors. Some 6,450 of the 10,000 British paratroopers who landed at Arnhem were taken prisoner. (German photograph)

elements operating in the Arnhem area into KGs. Within hours of the landing, two such task forces had already begun to form. KG *Spindler*, initially comprising CPT Krafft's training battalion, an engineer company, and an artillery battery, was tasked with establishing a defensive line west of Arnhem.[23] Similarly, KG *von Tettau*—formed from such varied units as a battalion of Dutch SS troops, an artillery unit with no guns, and students of an SS noncommissioned officers academy at Arnhem—was tasked with seizing the British DZs/LZs.[24] Although both KGs were skeletal at first, GEN Student pushed for and received reinforcements over the course of the next five days, again capitalizing on his ability to slow the tempo of the battle.

Although the Germans assumed a great deal of tactical risk in incorporating these loosely organized units into their defensive plan, it proved worthwhile. KG *Spindler*, with CPT Krafft's battalion, halted the advance of 1st and 3d Parachute Battalions, effectively isolating LTC Frost's 2d Parachute Battalion from immediate resupply or reinforcement. [25] The efforts of KG *von Tettau* to isolate the British 1st Airborne Division as a whole proved equally effective. Over the course of the battle, it is estimated that only 7.4 percent of Allied resupply drops were successful.[26] The remainder dropped onto DZs/LZs that had been recaptured by the Germans or fell victim to German AA fires, which were steadily reinforced throughout the fighting. Allied reinforcements fared no better. On 19 September, a portion of MG Sosabowski's Polish Parachute Brigade, traveling in 35 gliders, touched down in an LZ still under German control. Only two antiaircraft guns and a small contingent of men survived the landing.[27] Although the remainder of MG Sosabowski's brigade eventually landed south of the Rhine, it would be another four days before it could cross the river and reinforce the British forces, as all crossing assets were located with the Allied ground forces in Nijmegen.[28]

Lessons Learned. The most obvious lesson from this event is the need to maintain OPSEC at all times. Especially in today's contemporary environment—where volumes of data on operations, units, and Soldiers can be stored in a single memory stick—constant vigilance is required on the part of every leader to ensure that information is properly safeguarded. A second and equally important lesson is the value of correctly identifying and neutralizing the enemy's center of gravity while protecting one's own. As with the Germans at Arnhem, doing so can overcome disadvantages in technology, manpower, or firepower that would otherwise prove overwhelming.

Third Key Event

In addition to isolating LTC Frost's 2d Parachute Battalion, KG *Spindler's* defense against 1st and 3d Parachute Battalions inadvertently contributed to the final key event of the battle. As 3d Parachute Battalion fell back, both MG Urquhart and BG Lathbury were forced to take refuge in an attic. In one instant, the division's two top commanders were denied the ability to command and control their forces.

Causes. MG Urquhart's presence so close to the front can be traced back to communications problems that had plagued the 1st Airborne Division from the beginning of the operation. The radios the British forces were using proved largely unreliable, rendering MG Urquhart unable to communicate with Major (MAJ) Freddie Gough, his reconnaissance battalion commander, or BG Lathbury and 1st Parachute Brigade.[29] Frustrated with his inability to monitor the progress

Photo courtesy of the Imperial War Museum, London No. HU 002127

The vital bridge at Arnhem after the British paratroops had been driven back. (German photograph)

of his main effort, MG Urquhart left his headquarters and eventually linked up with BG Lathbury, who was advancing with 3d Parachute Battalion. Communication problems had also forced BG Lathbury to leave his headquarters and join his main effort. When 3d Parachute Battalion's advance against KG *Spindler* was halted, BG Lathbury was wounded, forcing MG Urquhart to move him into a local residence, where both men became trapped behind an advancing German defensive line.[30] Ironically, the British communications problems could have been alleviated by effective use of the Dutch telephone system, which continued in service during the battle.

MG Urquhart's absence rendered his headquarters unable to give guidance at a critical decision point. As MG Urquhart joined 3d Parachute Battalion, LTC Frost's men reported finding a ferry west of Arnhem.[31] Securing the ferry could have negated the need to enter Arnhem, since it could have provided a viable crossing for the Allied ground forces. However, because it was not originally listed as an objective for LTC Frost, and because no command decision was issued after its discovery, the ferry was bypassed. Eventually a sympathetic local cut the ferry free so it would not fall into German hands.[32] More importantly, however, the loss of contact with MG Urquhart and BG Lathbury forced BG Hicks to assume command.[33] BG Hicks, who had been securing the DZs/LZs, lacked an accurate picture of the fighting in Arnhem and had to assume that reinforcing LTC Frost directly was the main effort. Thus he committed three battalions into a constricted, 200-meter corridor referred to as the Den Brink Area.[34] This would prove a costly mistake, first because the area was bordered to the north by high ground and to the south by the Rhine River, providing barely enough room for a company to maneuver, let alone three battalions.[35] Secondly, the Germans had already arrayed a devastating amount of force along the corridor. To the north, an AA company and an engineer battalion reinforced with heavy weapons occupied houses along the high ground. Along the southern bank of the river, a reconnaissance battalion with heavy weapons occupied a brickworks building. Both had excellent fields of fire over the Den Brink Area.[36] The three British battalions marched headlong into a defeat so costly that 1st Airborne Division would not have the manpower for another attempt at reinforcing LTC Frost.

Lesson Learned. The lesson from this event is the importance of communications in developing situational understanding on the battlefield, and the importance of positioning a commander so that he can best influence the fight. Leaders should lead as far forward as possible, but they must maintain adequate communications so that their forward position does not hinder their understanding of the big picture. Additionally, it emphasizes the necessity of performing proper precombat checks on all vital systems.

FM 6-0, *Mission Command: Command and Control of Army Forces*, discusses the importance of communications to commanders, stating that shortfalls must be corrected to provide full information in order to develop accurate situational understanding.[37] It advises that modern information systems can help commanders command forward without losing situational understanding.[38] However, without effective information flow, commanders at the front risk becoming overly focused on the fight immediately ahead of them and losing sight of the bigger picture.[39]

Summary

The 1st Airborne Division's plan in Operation Market Garden represented a tenuous balance between the chance of achieving a great tactical success and the risk of a crushing operational defeat. Although British paratroopers would be conducting a surprise attack against an unsuspecting and demoralized force, they would also be the furthest forward, isolated from the nearest ground forces by nearly 100 kilometers.[40] The Allied defeat was ultimately a result of failure to capitalize on initial tactical advantage. By placing the concerns of the air forces ahead of the ground tactical plan, the Allies sacrificed both the element of surprise and the ability to concentrate forces on the objective, allowing the Germans to slow the tempo of the battle almost to a halt. This, in turn, allowed the Germans to isolate the 1st Airborne Division logistically. As the Germans received a consistent flow of reinforcements and supply from the rear, the British grew dangerously short of men and resources. To compound problems, MG Urquhart was removed from the fight at a crucial point without having established a clear chain of command or leaving a clear intent with his headquarters. As a result, the 1st Airborne Division committed the bulk of its forces into a disastrous attack into the Den Brink Area. This resulted in a defeat so costly that the paratroopers had no choice but to form a defensive perimeter and endure through the painfully slow advance of the Allied ground forces. Unfortunately, the wait would prove too long for LTC Frost and the men of 2d Parachute Battalion. With casualties mounting, and ammunition, food, water, and medical supplies growing scarce, the battalion could hold out no longer. Almost all of its surviving Soldiers were taken prisoner.

Captain Hoyer, now with the 10th Mountain Division, has served as a platoon leader, battalion adjutant, and company executive officer at Fort Bragg, North Carolina. He has been deployed to both Afghanistan and Iraq. A graduate of the United States Military Academy, he has also completed the Engineer Officer Basic Course, the Engineer Captains Career Course, the Sapper Leader Course, and Jumpmaster School.

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[15] Kershaw, p. 60.

[16] Ibid., p. 72.

[17] Ibid.

[18] Ibid., 71.

[19] FM 3-0, p. 5-7.

[20] Ibid.

[21] Kershaw, p. 71.

[22] Ibid., p. 115.

[23] Ibid., p. 103.

[24] Ibid., p. 113.

[25] Ibid., p. 73.

[26] Badsey, p. 85.

[27] Ibid., p. 57.

[28] Ibid., pp. 71, 76.

[29] Ibid., p. 43.

[30] Ibid., p. 49.

[31] Clark, p. 67.

[32] Ibid.

[33] Badsey, p. 54.

[34] Kershaw, p. 165.

[35] Ibid.

[36] Badsey, p. 25.

[37] FM 6-0, *Mission Command*, 11 August 2003, p. 3-17.

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Earning the President's Hundred Tab

By Major William J. Miller

The President's Hundred Tab is awarded to Soldiers for shooting exceptionally well with either the service pistol or rifle during the President's Hundred Match, an event that is held annually at Camp Perry, Ohio, during the months of July and August. The event is open to all Service members, as well as civilians and law enforcement personnel. The Civilian Marksmanship Program has overall control and responsibility for the competition. Each year, approximately 600 people register for the pistol match and 1,200 for the rifle match. Historically, this is a military match so only United States Army Service weapons that use iron sights with ball ammunition are allowed, although weapons should be match grade to be competitive.

Pistol shooters fire 40 bullets with either the M1911 (.45-caliber) or the M9 (9-millimeter) pistol held in one hand. There are three phases of the pistol competition: slow fire, timed fire, and rapid fire.

- During the slow-fire portion, competitors shoot ten bullets at 50 yards in 10 minutes, and then the shots are scored; this is repeated in a second round.
- During the timed-fire portion, the match transitions to the 25-yard line, where competitors shoot two strings of five bullets in 20 seconds. These shots are scored after ten shots.
- During the rapid-fire portion, competitors shoot another ten bullets, but in 10-second strings of five bullets each. Like before, the shots are scored after ten shots. The scores are tallied and the cut line is drawn.
- Usually, a score above 350 out of 400 will get a competitor near the cut line. The top 100 competitors are awarded the President's Hundred Tab with permanent orders. Soldiers wear the tab according to Army Regulation 670-1, *Wear and Appearance of Army Uniforms and Insignia*, paragraph 29-16c.

Rifle shooters can use any rifle made in the United States that was used by the military since the inception of the matches. Most competitive shooters compete with a match grade version of the M-16A2. The rifle competition consists of three phases.

- In the first phase, shooters are given 10 minutes to fire the first ten shots at 200 yards standing.
- In the second phase, shooters are given 70 seconds to fire ten shots at 300 yards. They begin in the standing position and move into the prone position, making a magazine change after the second bullet.
- In the third phase, shooters are given 10 minutes to fire ten shots at 600 yards in the prone position.
- Scoring is completed after each phase, and awards are handled the same as the pistol match. Usually, a score above 280 out of 300 will get a competitor near the cut line.

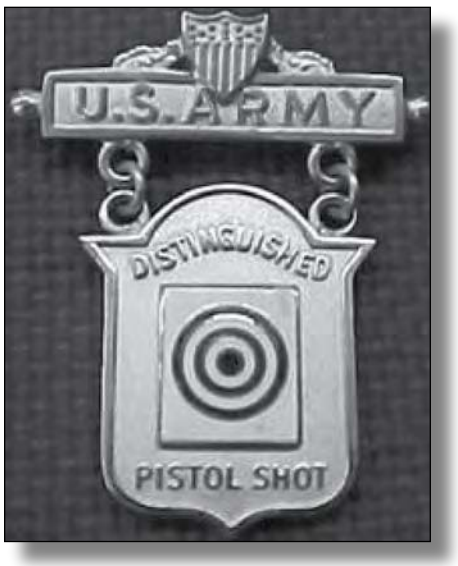
Soldiers are competing against all shooters, regardless of competency or whether they have already been awarded a tab. Soldiers can earn multiple President's Hundred Tabs throughout their career—for both pistol and rifle competition—although there is no difference in the tabs. Each year, 100 tabs are awarded for both the pistol and the rifle competitions during the President's Hundred Match. The winners of the matches receive several awards, one of which is a signed letter from the President of the United States. More information can be found at <*http://www.odcmp.com*>.

Major Miller is a student at the Command and General Staff College, Fort Leavenworth, Kansas. He has served in the 307th Engineer Battalion as a platoon leader, in the 44th Engineer Battalion in Korea as the supply officer and company commander, and in the United States Army Corps of Engineers as a construction program manager in Mobile, Alabama. He holds a bachelor's in mechanical engineering from the University of Iowa and a master's in engineering management from the University of Missouri-Rolla. An avid pistol and rifle shooter, he has been awarded the Excellence in Competition Pistol Shot (Bronze) Marksmanship Badge.

Earning the Distinguished Pistol Shot Badge

By Major William J. Miller

The fundamentals of marksmanship are some of the most important skills a Soldier will learn. The competitive marksmanship program, a long-standing tradition, was instituted in the aftermath of the Civil War by the United States Army. In 1884, General Phillip H. Sheridan formalized it when he designated distinguished marksmen with General Order 12. Originally, Soldiers could earn the Distinguished Marksmanship Badge with the rifle, pistol, or carbine. Eventually, the pistol competition separated itself from the rifle competition, and the first United States Army Distinguished Pistol Shot Badge was awarded in 1903. The United States Army Distinguished Rifleman Badge was created, and the Distinguished Marksmanship Badge was no longer awarded. The early badges, along with the Medal of Honor, were the only decorations authorized to be worn on the Army uniform. Although there are greater symbols of excellent marksmanship (such as the Distinguished International Shooter Badge or Olympic Medals), these distinguished badges can generally be earned by applying the fundamentals of marksmanship and remaining cool under pressure.



Distinguished Pistol Shot Badge

Excellence in Competition Points

Soldiers earn the Distinguished Pistol Shot Badge after earning 30 Excellence in Competition (EIC) points, also known as leg points or legs. These EIC points are earned through a series of specific marksmanship competitions held throughout the year and are cumulative in nature. After earning their first leg, Soldiers are awarded the Excellence in Competition Pistol Shot (Bronze) Marksmanship Badge, a permanent award accompanied by orders. It is only awarded from the commander of the Army Marksmanship Unit

(AMU) at Fort Benning, Georgia. The AMU maintains the records of approximately 25,000 Soldiers who have obtained EIC points at some point in their career for either the pistol or rifle.[1] Soldiers are awarded the Excellence in Competition Pistol Shot (Silver) Marksmanship Badge once 20 EIC points are earned.

Points are awarded based on the shooter's placement in a competition relative to other nondistinguished shooters. A nondistinguished shooter is one who hasn't earned the Distinguished Pistol Shot Badge. So, while the shooter may be competing against some of the best shooters in the country, who are more than likely already recipients of the distinguished pistol badge, a nondistinguished shooter will only be awarded legs based on his performance against other nondistinguished shooters. This was a condition that General Sheridan specified when he established the program to encourage new marksmen to compete and not get discouraged by the talents of more experienced marksmen.

For any of these EIC competitions, a Soldier will be awarded 6, 8, or 10 points based on his placement in the top 10 percent of nondistinguished shooters. In one competition geared toward introductory shooters at Fort Benning, Georgia, a shooter can only earn 4 points regardless of the placement in the top 10 percent, and the shooter must not have been awarded any pistol legs prior to the match. All National Guard State Championship matches are 4-point leg matches. Only the top 10 percent of nondistinguished match participants earn legs, and there must be at least ten nondistinguished Soldiers competing. Of the 10 percent, the top one-sixth earn ten points (also called gold placement or a gold leg), the next one-third earn eight points (silver placement or a silver leg), and the remaining one-half earn six points (bronze placement or a bronze leg). If there are going to be 100 nondistinguished shooters at a competition, then two gold, three silver, and five bronze legs will be awarded. If there are only ten nondistinguished competitors, then only one 6-point bronze leg will be awarded. It takes 25 nondistinguished competitors for the first 10-point gold leg to be awarded; there will also be one 8-point silver leg and a 6-point bronze leg awarded.

Courses of Fire Shot

There are two courses of fire shot for EIC competition: the combat pistol and bull's-eye courses of fire.

Combat Pistol Match. This match is shot with a standard rack grade M-9 pistol at a range of 15 meters with two hands on the pistol and in full field gear. There are two stages of fire: standing anti-body armor and standing quick-fire multiple engagements. The targets are figure 11 targets, showing an enemy soldier running forward with an AK-47 at the position of port arms.

- The standing anti-body armor course of fire requires the Soldier to shoot two bullets into the center scoring rings of the target and then one in the facial scoring area in 6 seconds. After a 6-second pause, this is repeated for three more targets with a pause between each target.
- The standing quick-fire multiple engagement course of fire requires the Soldier to shoot six bullets at four targets in 7 seconds and then 6 seconds with a pause in between. After quickly reloading, the Soldier fires six bullets at three targets (two in each) in 5 seconds and then 4 seconds, each with a pause in between.

Scoring occurs between the two stages of fire while targets are repaired or replaced. A total of 180 points is possible. To score legs, a Soldier should score higher than 145, but in some competitions it can be as low as 120—this depends on who's competing and range conditions. Scoring rings consist of a five ring out to a two ring (which is anything on the target), the facial scoring region is worth five points during the anti-body armor stage and two during the standing quick-fire stage. If the facial scoring ring is missed during the anti-body armor stage, then no points are awarded for that entire target. In the spirit of the competition, competitors are not allowed to shoot all rounds in the facial scoring region in order to ensure a higher probability of scoring points on that target.

Bull's-Eye Match. The bull's-eye or National Match Course of fire is shot one-handed with an M-9, M-11, or M-1911 pistol and in a modified garrison uniform. The pistols and ammunition can be rack or match grade depending on the competition rules. There are three stages of fire:

- The first stage requires the Soldier to shoot ten rounds at 50 yards in 10 minutes, and spotting scopes can be used to spot the impact of the round and adjust if needed.

Shooting kit

Primary Excellence in Competition Matches
Installation, United States Army Reserve, or Army National Guard State Championships
Fort Benning Pistol/Rifle Competition (Fort Benning, Georgia)
Currently Fort Benning is the only installation to conduct this level of competition specifically for active duty Soldiers. State-run competitions by the Army National Guard and United States Army Reserve are too numerous to list. This entry-level combat marksmanship competition, held in February, requires that competitors be stationed at Fort Benning or be a Reserve Officer Training Corps (ROTC) cadet from Georgia or Alabama. There are several competitions conducted during this match. Only four EIC points are awarded for a leg regardless of gold, silver, or bronze placement. To earn the points, a Soldier must not have any pistol EIC points.
United States Army Small Arms Championships
All-Army Pistol/Rifle Competition (Fort Benning, Georgia)
To compete in this competition, the shooter must be a member of the United States Army (Active, Reserve, or National Guard) or an Army cadet. This is a week-long combat pistol and rifle competition that is held in March. Pistol and rifle classes are taught by the AMU. There are several competitions conducted, one of which is the EIC match for rifle and pistol.
Major Command Championships
Joint Special Operations Command Pistol/Rifle Competition (Fort Bragg, North Carolina)
This is a week-long combat pistol and bull's-eye marksmanship competition in April. It is run similarly to the All-Army Competition, but with the added benefit of shooting a national match course of fire. It is one of the few competitions where two pistol EIC and two rifle EIC matches are shot.
First Army Commander's Warrior Challenge (Camp Bullis, Texas)
This good, all-around pistol and rifle competition is held in May and consists of a train-the-trainer course, practice firing, some team matches, and a foreign weapons competition. There are several competitions conducted, one of which is the EIC match for rifle and pistol.
Armed Forces Championships
Interservice Pistol Competition (Fort Benning, Georgia)
This combat and bull's-eye competition, held in June, is the best of the five Services' best, but any Service member is eligible. A 2700-type course is fired, with a Service pistol match and combat pistol match. The EIC match is a National Match 300-point bull's-eye match.
National Trophy Matches
National Trophy Pistol Match (Camp Perry, Ohio)
The best-of-the-best shooters in the country compete here (civilian, law enforcement, and military), but anyone is eligible to compete. It is run by the Civilian Marksmanship Program, and it is the national championship of bull's-eye shooting. With more than 600 people shooting in the pistol match, there are a lot of legs awarded.
National Guard Championships
Winston P. Wilson Pistol/Rifle Competition (Camp Robinson, Arkansas)
This competition is the National Guard Championship, but all branches can compete. The EIC matches are the combat pistol and rifle course of fire, and normally there are about 500 competitors. The competition is held in October.

- The second stage requires the Soldier to shoot a string of five rounds in 20 seconds two times with a controlled pause in between. On professional ranges, the targets will turn perpendicular to the shooter, but a pause can be instituted if range conditions don't allow for that.
- The third stage is the same as the second, except the strings are conducted in 10-second intervals.

Scoring occurs between each stage. A total of 300 points is possible. For this reason, the match is also called a "300 match." To earn a leg, Soldiers generally need to score above 260 points—this can vary considerably based on the skill level of the competitors. The targets are National Rifle Association (NRA) type B6 (50 yards) and B8 (25 yards) targets. Scoring rings consist of a bull's-eye or "X" ring, a ten ring to a five ring.

Sanctioned Matches

There are only certain sanctioned matches that Soldiers can compete in to earn their legs each year. These matches can either be bull's-eye or combat pistol, but must be classified as an EIC match. A Soldier can only shoot in four rifle and

four pistol EIC matches a year, regardless if it is an Army or alternative match. Visit <*www.usaac.army.mil/amu*> to view upcoming Army EIC matches on the AMU website.

Primary Matches. The table on page 70 lists the primary matches where Soldiers can earn EIC points.

Secondary Matches. Every branch of the military, the United States Coast Guard, and civilians, through the Civilian Marksmanship Program, have their own competitive marksmanship program with their distinctive awards program. Because of this, there are several secondary matches for Soldiers to earn EIC points; however, Soldiers can only earn 20 EIC points from non-Army competitions. If Major Army Command (Joint Special Operations Command or 1st Army), All-Army, or Interservice Championships are missed, alternate matches can be authorized in advance through the AMU on a one-for-one basis after missing one of the primary matches. This procedure is an exception and must be coordinated with the AMU, otherwise hard-earned legs from non-Army matches may not count toward the Soldier's Distinguished Pistol Shot Badge. Only two alternative matches can be shot per year, of which only one can be a civilian match. Some of the more popular alternative matches that Soldiers can compete in for pistol EIC points are:

- Atlantic Fleet Forces Command Pistol Matches (Virginia Beach, Virginia)
- Pacific Fleet Forces Command Pistol Matches (Camp Pendleton, California)
- All-Navy (East Coast) Pistol Championships (Virginia Beach, Virginia)
- All-Navy (West Coast) Pistol Competition (Camp Pendleton, California)
- Civilian Matches certified by the Civilian Marksmanship Program

All of the marksmanship badges are worn in the same manner as other standard Army marksmanship badges. The reference for wearing these badges can be found in Army Regulation 670-1, *Wear and Appearance of Army Uniforms and Insignia*, paragraph 29-16. Army Regulation 350-66, *Army-Wide Small Arms Competitive Marksmanship*, governs EIC points and procedures.

Summary

Visit <*www.odcmp.com*> to view all civilian and most military EIC matches available to compete in; Navy Marksmanship Team information can be found at <*http://www.usnst.org*>.

Earning your Distinguished Pistol Shot Badge is a rare occurrence and a very high honor. The process can be accomplished quickly with the Soldier scoring gold legs in three competitions or can take as long as a full career. As of 5 March 2008, there were 1,709 Distinguished Pistol Shot Badges awarded to Army personnel since 1903, with 375 "double" distinguished in both weapons and 14 "triple" distinguished (rifle, pistol, and international).[2]

The highest-ranking Soldier to wear the badge is General John J. Pershing, who earned the Distinguished Marksmanship Badge with the rifle and pistol before the Distinguished Pistol Shot Badge was created. General Lyman L. Lemnitzer, who later became the Chief of Staff of the Army, earned the Distinguished Marksmanship Badge (Rifle). Brigadier General Claudius Easley earned his Distinguished Marksmanship Badge (Rifle), and later as the Assistant Division Commander of the 96th Infantry Division declared the division the "Deadeyes" because of their proficiency with the rifle. A known distance rifle range at Fort Benning is also named in General Easley's honor. The highest-ranking engineer to wear the Distinguished Pistol Shot Badge was Major General Hugh J. Casey, General Douglas MacArthur's chief engineer; he also earned his Distinguished Marksmanship Badge (Rifle). One engineer, Lieutenant Colonel Rhonda Bright, earned her triple designation (pistol, rifle, and international) in 2006. She is the second woman in the Army to achieve this honor and one of 14 in the Army to ever reach this goal.

Major Miller is a student at the Command and General Staff College, Fort Leavenworth, Kansas. He has served in the 307th Engineer Battalion as a platoon leader, in the 44th Engineer Battalion in Korea as the supply officer and company commander, and in the United States Army Corps of Engineers as a construction program manager in Mobile, Alabama. He holds a bachelor's in mechanical engineering from the University of Iowa and a master's in engineering management from the University of Missouri-Rolla. An avid pistol and rifle shooter, he has been awarded the Excellence in Competition Pistol Shot (Bronze) Marksmanship Badge.

Endnotes

[1] Information obtained from Nancy Pool, the United States Army's Excellence in Competition (EIC) awards program manager and a member of the United States Army Marksmanship Unit at Fort Benning, Georgia.

[2] Pool.

References

Army Regulation 350-66, *Army-Wide Small Arms Competitive Marksmanship*, 17 July 2003.

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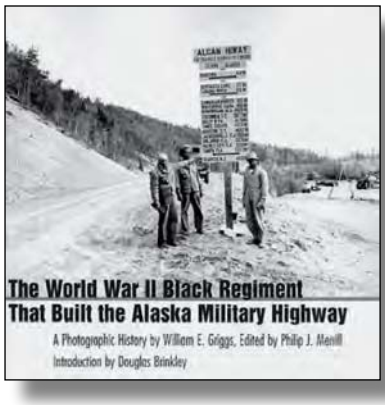
Hap Rocketto, "A Short History of the Distinguished Shooter Program," 2006, <*http://www.odcmp.com/Competitions/Distinguished_History.pdf*>, accessed on 25 February 2008.

Book Reviews



The World War II Black Regiment That Built the Alaska Military Highway: A Photographic History, by William E. Griggs, University Press of Mississippi: Jackson, 2002, 112 pages, ISBN 1-57806-504-6, $45.00 (hardcover).

• • • • •

Often compared in its engineering difficulty to building the Panama Canal, construction of the Alaska-Canada (Alcan) Highway—covering 1,523 miles—was completed in just over eight months in 1942, in large part by four black regiments of the Corps of Engineers. William E. Griggs, regimental photographer of the 97th Engineers, has captured his journey in *The World War II Black Regiment That Built the Alaska Military Highway: A Photographic History*. His book pays tribute to the men whose efforts on the Alcan Highway went unrecognized for 50 years.

In what Douglas Brinkley hails in his introduction as the "greatest engineering feat of the Second World War," the 97th finished its 194-mile section more than a year ahead of schedule, despite the severity of extreme weather; mosquitoes, mud, permafrost, and muskeg; segregation issues; and inadequate clothing and shelter—especially harsh for men who had entered the Corps in the Deep South.

The urgency in building this military road was due to the 1941 Japanese attack on Pearl Harbor and later takeover of two islands at the tip of the Aleutian Chain. Since Alaska's invasion seemed imminent, building a supply line became a priority. Even though the Japanese were successfully routed from the Aleutian Islands, the Alcan Highway was effectively used to transport thousands of airplanes to Russia via Nome and Fairbanks during World War II.

Each black regiment was assigned of a portion of the highway to complete. The 97th constructed the northern Alaska section, with its sharper extremes in temperature: -70 degrees in winter and in the 90s during summer when, due to Alaska's long days, work continued nonstop in shifts. The only two fatalities in the regiment involved a shooting and a Soldier freezing to death.

The engineers had surveyors working ten miles ahead of bulldozers that razed trees and cleared the path. In periods of thaw, vehicles got stuck in the mud constantly, requiring construction of corduroy roads (layers of logs, gravel, and sand) for traction. Boggy land—called *muskeg*, arising from permafrost conditions in Alaska—is moist soil laden with moss and dead plants, and in spring it behaves like quicksand for vehicles. This, coupled with the substandard equipment the black regiments received, made their achievement of completing the highway ahead of schedule a marvel.

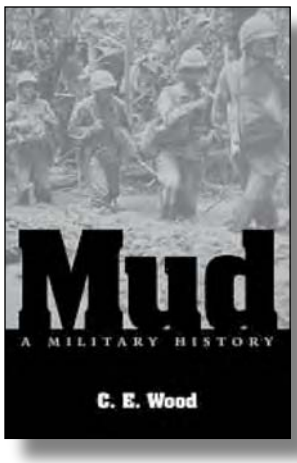
African Americans represented about one-third of the troops sent to work on the highway. The U.S. Army was finally racially integrated in 1948 by Executive Order of President Harry Truman. However, during construction of the Alcan, the Army's black Corps of Engineers, always working under white officers, endured prejudice and substandard treatment. For example, they received unserviceable trucks destined for salvage and clothing unsuitable for the harsh climate, as well as cloth tents to be used only in the wilderness—unlike their white counterparts, who resided in Quonset® huts within air bases or populated civilian areas.

Griggs has written captions for his nearly 100 black-and-white photographs which, in addition to showing the camaraderie of the engineers, are understated testaments to their strong work ethic and tenacity to get the job done. One caption opines that these pictures of the 97th are the only *formal* photographs of *any* black regimental Soldiers who worked on the Alcan Highway. There are pictures of Soldiers on a troop train heading for embarkation from Seattle; sunken mud-bound trucks; a Soldier holding up fresh salmon for the regiment's pet bear cub; engineers creating corduroy roads over mud and muskeg; bridge construction across waterways; and a penultimate moment of the author shaking hands with a bulldozer operator on the Alaska-Canada border—before the 97th continued 20 miles beyond their assignment, into Canada, to meet the oncoming white regiment.

As regimental photographer, Griggs managed to get himself into many of the photos. Though he was doing an assignment, his pictures are more elemental, and elegant, in their storytelling. As Brinkley observes once again, "None . . . [of the other extant publications on these men] offer what Griggs's does: an honest matrix of memorable images documenting the raw, unfiltered experiences of black [S]oldiers at work in a segregated army."

Consider: These engineers had to use pickaxes to chop away any glaciers they didn't build around. They lived

isolated in tent cities in subzero weather. In winter, they left trucks running all night or placed torches underneath them so they would start. Supplies were dropped to them by parachute. More effective than any straight narrative can be, pictures like these leave one incredulous at the engineering effort required in such an environment. Consider the splendor of their ordeal, since you as the reader will—guaranteed—regard highly the men of the 97th Regiment by the end of this photographic essay.



Mud: A Military History, by C. E. Wood, Potomac Books, Inc.: Washington, DC, 2006, 190 pages, ISBN 1-57488-984-2, $23.95 (hardcover).

• • • • •

In military operations, mud can be—well, a quagmire. But its presence confers both hindrance and advantage, as C. E. Wood points out in his book *Mud: A Military History*. Alternating harrowing and humorous aspects taken from interviews, memoirs, and historical records, the author explores the character of mud and its effects on warfare in North America, Europe, and Asia in the past few centuries, with archival photos accenting mud's significance.

It isn't just mobility that is affected by an oozing, slippery earth; the very morale of warfighters sinks too, in trying to gain some ground. As first-person accounts reveal, mud provokes anger and frustration by underscoring the general distress of staying wet and dirty. The author conjures images of combatants encased in heavy, crusty mud and has the reader consider not only their discomfort, but mud's deterioration of their clothing and boots as well. Basing his early chapters on how mud can assert itself during wars—permanent mud (marshes), seasonal mud (areas of excessive intermittent rainfall), and random mud (regions of thaw or unpredictable rain)—Wood devotes the remaining sections to mud's impact on engineers, health, morale, fatigue, and wear and tear.

Mud's *characteristics* include softness, adhesiveness, and slipperiness (which can even remove the advantage of tracked and all-wheel vehicles in staying on the road); mud's *effects* are churnability (how forces can make more mud by disturbing it), capacity to dampen explosives, and ability to create suction. In an example of this latter effect, engineers in Vietnam had to use explosives to loosen the vacuum under mud-bound retriever tanks. Helicopters also fall prey to the powerful suction of mud as they ascend from it.

But mud has its virtues: A sleeping soldier whose leg was run over by a vehicle was only bruised, due to the soft mud beneath him. An Army medic who jumped out of a helicopter in Vietnam lived, since he landed in mud. A parachutist in World War II survived when his airplane ran out of fuel over China and he fell into mud next to a rice paddy.

Counterbalancing the *hazards* of mud on a battlefield—such as its slipperiness and suction, soil bacteria (specifically, tetanus and anthrax) that can infect wounds, and gas gangrene (from soil containing bacillus of horse manure)—the author includes a surprising number of mud's *benefits*. It can serve as a poultice for wounds, a mudpack to discourage insects like red ants and gnats, a layer on clothing for warmth, a source of moisture placed on the tongue in inordinately hot weather—despite the bacterial content, which is especially virulent due to mud's plasticity. Additionally, stories of mud used for camouflage and concealment in Vietnam, the Spanish-American War, the Crimean War, and the war in Afghanistan are detailed by the author.

In the chapter "Mud and Engineers," Wood discusses the use of corduroy roads in muddy areas; these engineer-built log roads were used, for example, by Germans in Russian swamps. A variant of corduroy roads by the South Vietnamese, using banana fronds and laterite (a clay-like substance with heavy iron deposits), was put to good use by American engineers in Vietnam. The author points out that in muddy conditions additional engineers are always needed, and they must keep adding construction materials (such as bricks or logs) nonstop to the sloughy surface to assure mobility.

Mud in wartime hides elements that contribute to its fetid quality—human and other animal bodies in decay, waste materials, sunken military equipment with its toxic liquids, and warfighting chemicals. This side of war, perhaps unconsidered by the general populace, is part of Wood's environmental discussion. The difficulty of evacuating casualties, already an exhausting and slippery business in mud, can be compounded by treacherous elements just beneath it.

Trenchfoot (now called immersion foot)—a concomitant of water plus cold temperatures, and which can lead to gangrene—was rampant in World War II, when combatants often stood in water for hours on end. As doctors performed surgery while standing in bunkers, water seeped through the ceiling and rose higher on the ground inside, often up to their knees. Attempts to keep feet dry in the field included digging trenches around warfighters and filling entrenchments with stones to stand on. Many trials were conducted to produce a waterproof boot for prevention of trenchfoot, but Wood notes that most solutions were primitive or ineffective (rawhide), poor in quality (English shoes that fell apart), or impracticable (wooden boards strapped to boots) until a waterproof thigh boot was issued in 1915. Civil War Soldiers were often shoeless as they marched in mud and suffered many foot maladies.

The attributes and consequences of mud are quite shocking in their full delineation by Wood. How many people (before reading this book) would have considered that when mud is knee-high, extraction of oneself is possible—whereas when it rises to thigh level, mere suction often prevents escape? Wood cites accounts of men drowning in mud, with those around them helpless to assist. The author even discusses the awful associations the military have with dying in the mud, and how their compatriots will lift a fallen person above it to carry the corpse to dry ground; dignity issues abound in an environment fostering what might be called an ignoble death.

And yet, Wood's humor is pervasive, as in references to "mud's dirty tricks" and the weather's steel-trap tendency to change dirt to mud at the defining moment of an army's tactics. In an odd anecdote, Soldiers told of experiencing a thwarting "mud rain" in Iraq in 2003 as rain embraced sandstorm particles, producing slick mud that coated all as it fell.

What makes *Mud: A Military History* unusual is its easy readability along with technical relevance for military engineers and planners. Yet it is written with a literary flair and has a naturalistic quality in its unblinking realism.

This book may be the first to address mud's impact on the psyche—the morale, health, and sustained effort of warfighters while their operations go forward. As the author points out, mud either prevents or offsets this forward movement in battle. Among his written sources, he cites as the "best" reference Harold A. Winters' *Battling the Elements,* a study of mud and mobility during the Civil War, World War I, and World War II. As a former Marine and Soldier, C. E. Wood has carefully crafted a book on an aspect of environment in wartime: the behavior of mud, and those individuals having to reconcile themselves to it.

Reviewed by Susan Stevens, currently a Department of the Army Intern in Instructional Design in the Maneuver Support Center Directorate of Training, Fort Leonard Wood, Missouri. Her background includes a civil service career in various federal agencies and teaching English, literature, and creative writing at high school and college levels.

Dedication

The following members of the Engineer Regiment have been lost in the War on Terrorism since the last issue of *Engineer.* We dedicate this issue to them.

Allmon, Sergeant William E.	1st Battalion, 64th Armor Regiment, 2d Brigade Combat Team	Fort Stewart, Georgia
Buxbaum, Specialist Justin L.	62d Engineer Battalion, 36th Engineer Brigade	Fort Hood, Texas
Dhanoolal, Sergeant Dayne D.	2d Battalion, 69th Armor Regiment, 3d Brigade Combat Team	Fort Benning, Georgia
Dix, Specialist William T.	14th Engineer Battalion, 555th Engineer Brigade, I Corps	Fort Lewis, Washington
Gonzalez, Specialist Alex D.	43d Engineer Company, 3d Armored Cavalry Regiment	Fort Hood, Texas
Kanakaole, Private Eugene	87th Engineer Company, 8th Battalion, 36th Brigade	Fort Hood, Texas
Marion, Private First Class Adam L.	171st Engineer Company, North Carolina Army National Guard	Saint Pauls, North Carolina
McNeal, Staff Sergeant Jeremiah E.	237th Engineer Company, 276th Engineer Battalion	West Point, Virginia
Richard III, Sergeant Joseph A.	4th Brigade Special Troops Battalion, 4th Brigade Combat Team	Fort Polk, Louisiana

The Castle at Camp Bucca

By Sergeant Raymond Sieger

During their Operation Iraqi Freedom deployment at Camp Bucca, Iraq, engineer Soldiers of the 310th Military Police Battalion's repair and utility (R&U) section chose a unique way to honor their Army branch. They constructed a building with a façade in the form of the Army engineer castle as a way to honor Army engineers who had fallen in the wars in Iraq and Afghanistan.

Two weeks after arriving at Camp Bucca and setting up shop, Soldiers in the section learned that they needed to vacate the existing shop to make room for another arriving unit. With no other building available, they were told by the forward operations base (FOB) field engineering team that land would be set aside for them but that they would have to build their own shop. As one of the section's noncommissioned officers (NCOs) designed and drew up blueprints for the new building, other team members set out to build a temporary building to secure their equipment. This 500-square foot structure would also serve as a training tool to teach team members with other military occupational specialties the basic carpentry skills they would need when it came time to build the much larger permanent structure.

The Castle gets a coat of red paint.

In spare time outside the section's duties of building and maintaining the camp's theater internment facility, the Soldiers built the "Engineer Castle" in 19 days over the course of 3 months. Considering the quality and availability of lumber in Iraq and the size and complexity of the façade, the building was a monumental achievement for the section. In the end, it became a landmark on the FOB, even for approaching aircraft since it was directly in the flight path of incoming helicopters. With its detailed design and brilliant color, there was nothing like it in all of Iraq.

The towers on each side were intended as offices for the engineer officer and the NCO in charge, while the remainder of the building was to be used for shop and tool storage areas. In the rear was a covered saw deck for large projects. However, since the building was not considered an FOB asset, it was never included in the FOB power plan, and the original aims were never realized. Ironically, just 5 days before the 310th was due to redeploy to the states, the building burned to the ground when a generator placed close to the saw deck by the replacement unit caught fire. The building was to be dedicated with a memorial plaque donated by the vendor responsible for most of the materials used in the construction. The structure may be gone, but its memory and purpose will live forever in the hearts and minds of the Soldiers of the 310th Military Police Battalion and all those who served at Camp Bucca while the castle stood.

Sergeant Sieger was the R&U section leader while deployed with the 310th Military Police Battalion. He joined the Army in 1974 and left in 1987, when he enlisted in the Navy and served as a corpsman until 1994. He joined the Army Reserve in 2004 as an engineer. In his civilian job, he is a land acquisition project manager with a national home builder.

Engineer Update

Maneuver Support Center (MANSCEN) and Engineer School Lessons Learned Integration (L2I) Cell. MANSCEN and the United States Army Engineer School L2I Cell need your help. To keep training, doctrine, and combat developments current and to prepare for the future, it is critical that the school continuously receive relevant engineer observations, insights, and lessons (OIL). The L2I analyst can derive information from a variety of sources: unit after-action reports (AARs); tactics, techniques, and procedures (TTP) used by units in and returning from theater; Soldier observations/submissions to the Engineer School; and requests for information (RFIs). This information is used to conduct doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) gap analyses and to determine solutions. These solutions are distributed to the Engineer Regiment via new doctrine and training products, *Engineer* (The Professional Bulletin of Army Engineers) and other publications, websites, and by answering RFIs. With the modular transformation in full swing, many engineer units are looking for sample tactical standing operating procedures (TACSOPs) for the new units being established. You can help by forwarding any of these materials from your unit's deployment to the L2I analyst. Unclassified information can be sent to <*donald.mark.perry@conus.army.mil*>. Classified information can be sent by secure Internet protocol, routed (SIPR) e-mail to <*donald.mark.perry@conus.army.smil.mil*>. For more information, call (573) 563-5340/3820.

2008 Engineer Unit Directory. The 2008 United States Army Engineer Unit Directory is available online in Adobe PDF format at <*http://www.wood.army.mil/engrmag/Engr%20Unit%20Dir/2007Directoryonline.pdf*>. Since many unit addresses have changed recently, take a moment and see if your unit's listing is correct. Changes to the Unit Directory can be made by calling (573) 563-7644 or e-mailing <*leon.engineer@conus.army.mil*>.

("DPW in Iraq," continued from page 55)

U.S. civilians would fill the critical roles of obligating funds, whereas vetted local nationals or expatriates could perform roles such as construction inspection and engineering design. The DPW would be in support of the COB mayor's section but not in its chain of command, providing the independence of operation required by the facility engineers.

The skills required for these positions already exist in the United States Army Facility Engineer Group (FEG), which is scheduled to begin reorganization in fiscal year 2009. Currently, all the FETs and facility engineer detachments in the Army are assigned to the FEG. The new force structure would provide the 412th and 416th Engineer Commands with a pool of skilled personnel to fill these positions.

Sustaining Facility Engineer Skills

As this operation has illustrated, the Engineer Regiment must provide maneuver commanders with officers who have facility engineering skills to help construct COPs and FOBs. With the deactivation of the FEG, the intellectual capital of this organization will be lost if it is not captured by a new organization. The United States Army Engineer School must recognize this and work with the FEG to acquire the lessons learned, DPW workshop lesson plans, and other key information before it is lost. The position of facility construction contract management engineer should be on the brigade and division engineer staffs. The skills required for the position include—

- Using the Theater Construction Management System.
- Estimating costs.
- Writing specifications.
- Managing contracts.

Positions on the G7 staff should focus on MILCON program development as well as warfighting. The leadership should recognize that the skills required for these positions are developed through pertinent assignments and not through course work alone.

Lieutenant Colonel Kniesler, United States Army Reserve (USAR), is commander of the 673d Facilities Engineer Detachment and was officer in charge of the construction management section of the 20th Engineer Brigade at LSA Anaconda. While on active duty, he served as a mechanized platoon leader and company commander with the 7th Engineer Battalion, 5th Infantry Division at Fort Polk, Louisiana; as deputy area facility engineer at Camp Casey, Republic of Korea; and as Commander, 642d Combat Support Equipment Company, Fort Devens, Massachussetts. In the USAR, he has been assigned to the 78th Training Division and the Army Staff in the Office of the Chief of Engineers (Pentagon) and is currently with the 673d FED. His civilian job is director of new construction for Mount St. Mary's University in Maryland. He has a bachelor's in architecture from Catholic University.

Leadership Development

Multi-Source Assessment and Feedback (MSAF) Program

The Center for Army Leadership has launched the Multi-Source Assessment and Feedback (MSAF) program, a confidential and focused online assessment tool for individual leader development. MSAF provides individual feedback to leaders related to the eight leadership competencies described in FM 6-22, *Army Leadership*. MSAF applies to all domains of training and education (self-development, institutional, and operational), all cohorts (officers and warrant officers, noncommissioned officers, and Army civilians), as well as both Active Army and Reserve Component (RC) personnel.

Individuals will be required to initiate an assessment prior to attending Professional Military Education (PME) or Civilian Education System (CES) courses. For organizations within the operating force, Active Army brigades will be scheduled every three years to participate in the program and RC brigades every six years. Organizations within the generating force are scheduled every five years. Individuals may use the MSAF at other times on their own initiative for self-development purposes. MSAF assessment instruments and feedback accessed through the My Leader Development section on AKO or by logging on to <*https://msaf.army.mil*>.

For more information, contact Mr. Howard Brewington at (913) 758-3174.

Developmental Counseling Course

The Center for Army Leadership has recently released a new online course for all Army leaders on Developmental Counseling. This course consists of three modules, totaling approximately eleven hours of instruction. The modules cover types of counseling, leaders as counselors, and the counseling process.

FM 6-22, *Army Leadership*, the Army's newest leadership doctrine, states that "counseling is one of the most important leadership development responsibilities for Army leaders." This counseling course is one way for leaders to hone their counseling skills and to help prepare for greater responsibility. Since the course is online, Army leaders may work on the course at a time and place that are convenient to them.

There are two important reasons to improve counseling skills. First, counseling is one of the most important ways to develop subordinates. Second, counseling helps the leader and Soldier to come to a common understanding about the mission and how it needs to be accomplished.

The Developmental Counseling Course and FM 6-22 are both available on the Combined Arms Center website at <*http://usacac.army.mil/cac2/digitalpublications.asp*>.

For more information, contact Dr. Jon Fallesen at (913) 758-3160.

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