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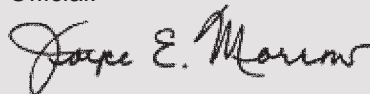
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Front cover: CPT Joe Byrnes, 554th Engineer Battalion, prepares a Talon robot during the IED 9-Line event of the 2010 Best Sapper Competition at Fort Leonard Wood, Missouri. Byrnes and his teammate CPT Jason Castro won this year's competition. Photo by Luke Waack.

Back cover: U.S. Army photos

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Clear The Way

Brigadier General Bryan G. Watson
Commandant, United States Army Engineer School



First and foremost, I want to thank you for an outstanding ENFORCE 2010. It was great to see our leaders—young and old, officers, warrants, and NCOs—gather from across this Regiment to continue the professional debate about the future. Most important, it was extraordinary to see our young leaders at the company level lead the debate—from their foxhole as some of our most proven combat leaders—and have the senior leaders listen to their insight and counsel. I want to extend my sincere thanks to all the young leaders who went above and beyond to be at the center of the debate rather than on the sidelines. Your passion for service to the Army and this profession honors this Regiment. Our future is in great hands!



The chief purpose of ENFORCE this year was to confirm and adjust the Regimental Campaign Plan—based on your feedback—that has become the centerpiece of all actions at your Regimental Headquarters. I urge you to continue to make this YOUR Regimental Campaign Plan. Be an active participant in the decision process, track our progress on achieving the objectives of the various decisive points (DPs), and understand the plan's direction and the assumptions about the future on which the decisions are based. Above all, be able to articulate the plan and its salient points. We have tried to provide you with the ability to tap into the campaign plan through an online dashboard that lays out each of the lines of effort (LOEs), DPs, the progress of staff actions, and a rolling summary of upcoming decisions. And within each DP there is a forum that allows you to provide input into those decisions. You can access the campaign plan with your common access card (CAC) at the following site: <https://vo.wood.army.mil/sites/CP/ENCP/default.aspx>. Make this your campaign plan and help the headquarters better serve the Regiment.

To spark your interest, below are the key areas that—based on ENFORCE—will be the focal points of our campaign plan efforts in 2010-2011. This is not the complete list, but the ones where I need your insights. I've listed them by their associated LOE and used the DP number so you can easily find them and provide input using the online dashboard.

LOE #1: Train Engineer Warriors

DP 1-02: Implement Sapper Campus. Sapper Campus will be a premiere training facility with upgraded facilities

and training aids and collocated combat engineer and bridge crewmember training, providing maximum space for the student load.

DP 1-04: Institutionalize Counter Explosive Hazards Center (CEHC) Training. Bring CEHC training courses (Route Reconnaissance and Clearance Course [R2C2], Mine Detection Dog [MDD] Course, etc.) in line with other functional courses in the training base under the 1st Engineer Brigade.

DP 1-08: Enlisted Building Great Engineer (BGE) Initiative. The 21R course is training a new program of instruction (POI), expanded by 2 days to incorporate

needed blocks of instruction (completed). The 21K course is training a new POI, expanded by 4 days to incorporate needed blocks of instruction (completed). The 21W course is training a new POI, expanded by 13 days to incorporate needed blocks of instruction. Combat engineer training POI(s) include training on newly fielded equipment; training is fully supported through achieving needed doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) requirements as necessary.

LOE #2: Develop Engineer Leaders

DP 2-06: Engineer Leader University. Redesign the education system following a university model that allows the student and gaining organization more input into the individual's education. Allows for "testing out" of classes, better supports the warfight, Army Force Generation (ARFORGEN), and building adaptive leaders.

DP 2-13/14: Interactive and Relevant Instruction. Make education more interactive by dramatically reducing classroom instruction and making small-group problem solving the centerpiece of facilitated instruction based on relevant warfighting challenges.

LOE #3: Support Current Operations

DP 3-09: Mission Rehearsal Exercise (MRX) Academics. Engineer units provide MRX Academics with the engineer technical expertise necessary to allow them to transition smoothly into operations.

DP 3-10/11: Regimental Lessons Learned Integration and Reachback. Build greater capacity within the Engineer School to collect, track, and integrate unit lessons learned into classroom instruction.

(Continued on page 10)

Lead The Way

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



Engineers, across all ranks and components, have a big stake in Achieving the Vision for our Regiment. The future policies, doctrine, equipment, and manning for the Regiment depend on the Soldiers, because they're doing the heavy lifting in garrison and in combat. They use the tools, apply the doctrine, and enforce the policies that guide us along a path that gives the Regiment quality engineers, using quality equipment and solving the maneuver commander's toughest problems. Everyone has a vision of what outstanding engineers should be, know, and do. It would be useful to reflect on what present-day maneuver commanders expect of engineers and whether or not we're meeting their expectations.



(6-mile run) exercises. Admitting that we need to be good at all types of physical demands is the first step to recovery. Focus on the weak areas. Some Soldiers are good weightlifters while others are good distance runners, and they tend to train their body on what they're good at and blow off their weak areas. The Army is telling us that we have to be good at all components of fitness, including the metabolic pathways. Dr. Greg Glassman and his wife Lauren have created the CrossFit website that addresses overall fitness and is worth a look.³ His article "What is Fitness?" is a great place to start. You can find it at <http://library.crossfit.com/free/pdf/CFJ-trial.pdf>

The Krebs cycle is the metabolic pathway that takes carbohydrates, proteins, and fats and converts them into carbon dioxide and water to generate a usable form of energy for the body.⁴ In my opinion, it's the most important pathway, and we give it the least attention. This is where the battalion commander and CSM must step in and make amends. Talking to the mess sergeant and coming up with a cost-effective menu that's nutritionally sound is time well spent. The dining facility may not be able to buy the best produce or meats, but there's a lot that can be done with food preparation. Ask the hospital nutritionist to help evaluate the mess hall's meal selection and provide some train-the-trainer classes. Your dining facility has to show a profit, which means the headcount has to stay high. Expecting every leader to eat at least one nutritionally good meal each day at the mess hall is not too much to ask. I've heard Soldiers say that their metabolism is so good that they can eat anything and stay fit. Ask them how much more fit they would be if they ate good meals instead of swallowing cheeseburgers whole and chasing them down with cheesy fries and Mountain Dew®.

Maneuver commanders expect engineers to be fit enough to work and fight alongside infantry and armor Soldiers while constructing fortifications or demolishing stuff. When the enemy shows up, commanders expect engineers to lay down their tools and be a part of the attack. We've always prided ourselves on being some of the smartest and most physically fit Soldiers in the world. CPT Tim Touchette and 1SG Mike Balch led by example while I was assigned to Alpha Company, 65th Engineer Battalion. We would lay hold and put in hard physical training, and it paid off when we linked up with our infantry brothers out in the field and showed them how to hump up and down the mountains of Hawaii and arrive at the objective with plenty of gas in the tank. Look out across the Regiment and you'll see that our duties demand the same level of fitness as they did 20 years ago. The Army's newest manual on fitness, TC 3-22.20, *Army Physical Readiness Training (PRT)*, is a step in the right direction, centering all physical training on Warrior Tasks and Battle Drills.¹

What is your definition of fitness? The Army's PRT manual states, "To prepare Soldiers to meet the physical demands of their profession, a system of training must focus on the development of strength, endurance, and mobility, plus the enhancement of the body's metabolic pathways."² Most of us are familiar with strength, endurance, and mobility, but the picture gets fuzzy when we discuss metabolic pathways. To keep it simple, there are three main metabolic pathways we use to perform physical activity—the phosphagen pathway, the glycolytic pathway, and the oxidative pathway—and one pathway to convert food into energy—the citric acid, or Krebs cycle. How well you condition your body to use each pathway will determine how well you perform short-duration, high-intensity exercises (like a one rep max deadlift), medium-duration, medium-intensity (2 minutes of sit-ups), or long-duration, low-intensity

The ultimate goal is improving Soldiers' ability to deal with physically and emotionally demanding situations. Their overall fitness depends on your knowledge and experience to develop a plan that is challenging and competitive and raises their desire to improve their own level of fitness.

¹Warrior Tasks and Battle Drills <<https://atn.army.mil/Media/docs/WTBD%20List%20Mar%202010%20-%20Copy.pdf>>.

²TC 3-22.20, March 2010, pp. 1-7, para. 1-18.

³<<http://www.crossfit.com/>>.

⁴<http://en.wikipedia.org/wiki/Krebs_Cycle>.

Show The Way

Chief Warrant Officer Five Robert K. Lamphear
Regimental Chief Warrant Officer



Happy Birthday, Engineer Warrant Officers! Celebrations at home and abroad marked the Army Warrant Officer Corps's 92d birthday on 9 July 2010. In recognition of the event, this issue of the Engineer Bulletin includes an outstanding article titled "92d Birthday of the Army Warrant Officer" by CW5 David P. Welsh (Retired) on page 70. The article provides a historical overview of warrant officers from the establishment of the Army Mine Planter Service in 1918 to the current Warrant Officer Program. Today, warrant officers make up nearly 15 percent of the Officer Corps and are represented in 17 Army branches, consisting of 70 unique military occupational specialties (MOSs).

The rich history of the Army warrant officer extends to our own engineer warrant officer specialties—Construction Engineering Technicians and Geospatial Engineering Technicians. The first Utilities Maintenance Officer, MOS 7120, was added during World War II in 1943. The Construction Engineer, MOS 7110, was added to the warrant officer ranks in 1948. Engineer warrant officer MOSs continued to evolve, expand, and contract over the next 67 years to meet the Army's needs, highlighted by the Nuclear Power Plant Technician, MOS 351A, which came on line in 1962. Assigned to the Engineer Reactor Group, these highly skilled nuclear power plant technicians could operate fixed and floating power facilities such as the Army's Stationary Medium-1 (SM-1) prototype nuclear reactor and the MH-1A Sturgis floating nuclear power plant, a 45-MW pressurized water reactor. MOS 521A, Utilities Maintenance Technician, created in 1961 and split into two MOSs with the addition of MOS 521B in 1972, effectively took over the nontactical/fixed installation part of the MOS. The Utilities Operation and Maintenance Technician, MOS 310A, was created in 1977, with the numeric designation changing to 210A in 1987. The 210A MOS name change to Construction Engineering Technician signifies a major shift in the MOS's core mission and brings its evolution full circle back to its 1943 roots—Construction Engineer.

The origins of the Geospatial Engineering Technician can be traced back to 1943 and World War II as well, with the creation of the Topographic Engineer, MOS 7915, and the Aerial Photographic Officer, MOS 8502. Over the years, additional MOSs were created and deleted along with various name changes. They included Map Reproduction



Officer, MOS 7917; Map Reproduction Technician, MOS 831A; Photomapping Officer, MOS 7916; Photomapping Technician, MOS 811A; Terrain Analysis Technician, MOS 841A; Geospatial Information Technician, MOS 215D; and finally to our present day title, Geospatial Engineering Technician, approved by TRADOC in February. The MOS's numeric designation will change to 125D on 1 October 2010. For the next issue of the Engineer Bulletin, I will solicit specific engineer warrant officer history articles that expand on the information provided above.

On another note, I have been able to visit a few units in the past year and have been extremely pleased with the positive comments I received from commanders and command sergeants major about your technical and leadership abilities. Keep up the great work! I did, however, discover some systemic issues that are challenging our younger warrant officers with regard to Officer Evaluation Report (OER) counseling and professional development. Many warrant officers are not receiving their initial and quarterly OER counseling on time or at all. Engage your rater and senior rater, and get the counseling sessions on the boss's calendar. In addition, warrant officers must be included in Officer Professional Development (OPD) sessions. Ensure that you are tied into the training schedule early, and add this as one of your OER support form objectives. At least once a year, provide a warrant officer brief to the command during OPD. Let's fix this issue now.

The engineer warrant officer accessions board was held the week of 12–16 July. We are not attracting enough non-commissioned officers (NCOs) to become warrant officers, especially Geospatial Engineering Technicians. The addition of seventy MOS 215D brigade combat team positions to the force makes this a great time to become a geospatial warrant officer. We are looking for outstanding NCOs who possess a sustained and demonstrated level of technical and leadership competency as supported by rater and senior rater comments on NCOERs. I urge commanders and warrant officers in the field, when asked for a letter of recommendation, to recommend your best NCOs for the warrant officer program. For more information about the upcoming board or how to become an engineer warrant officer, log on to the Army recruiting website at <http://www.usarec.army.mil/hq/warrant>.

Until next time, stay safe. Essayons!



Dedication

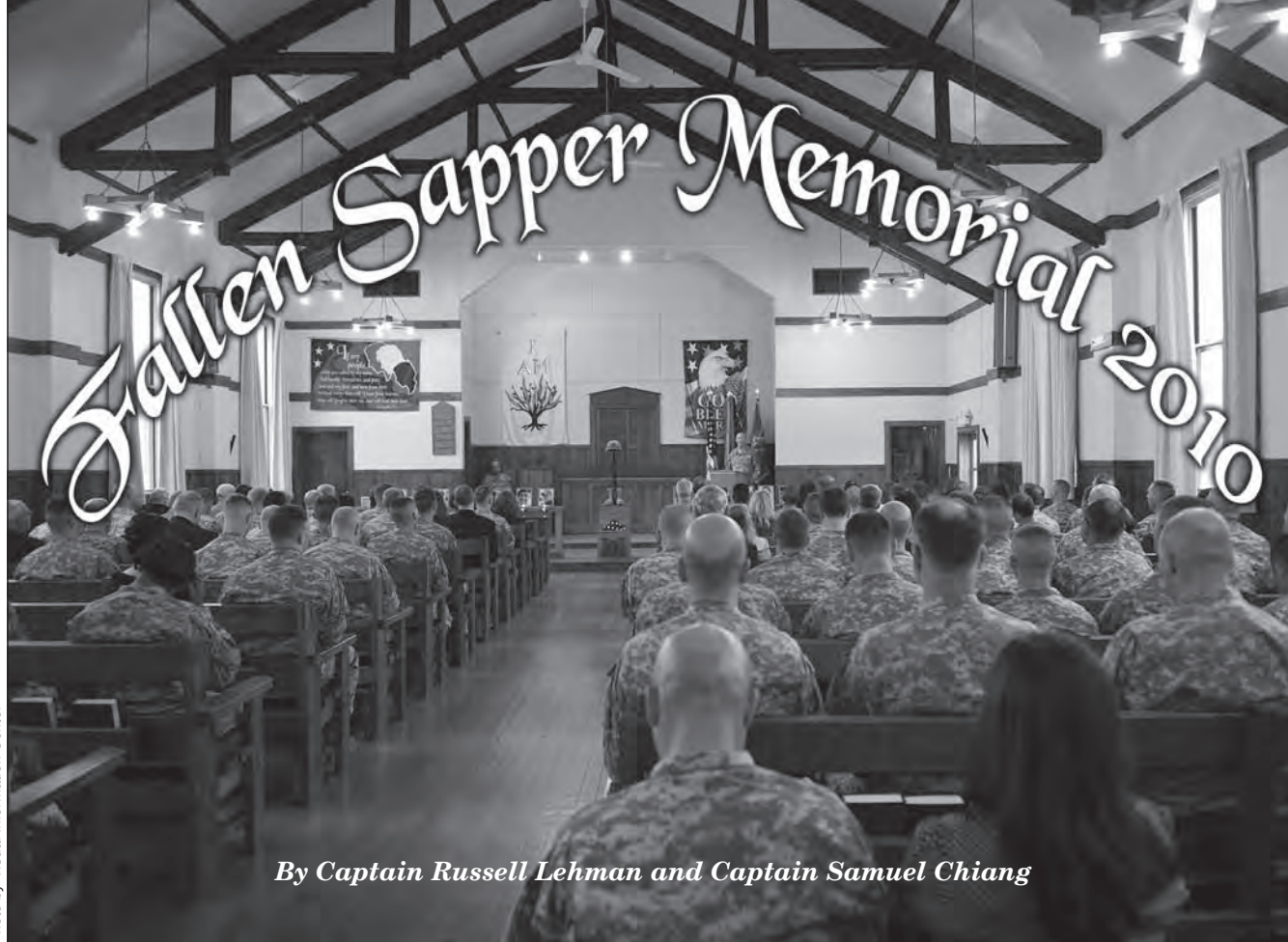
The following members of the Engineer Regiment have been lost in the War on Terrorism since the last issue of *Engineer*, or were inadvertently omitted from a previous list. We dedicate this issue to them.

Anderson, PFC Billy G.	Alpha Company, 508th Special Troops Battalion, 4th Brigade Combat Team	Fort Bragg, North Carolina
Crow, Jr., SGT Robert W.	HHC, 203d Engineer Battalion, Missouri ARNG	Joplin, Missouri
Fisher, SGT Zachary M.	618th Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Grady, SPC Ryan J.	Alpha Company, Special Troops Battalion, 86th Infantry Brigade Combat Team	Bradford, Vermont
Holmes, SGT David A.	810th Engineer Company, 203d Engineer Battalion, Georgia ARNG	Swainsboro, Georgia
Hotchkin, PFC Gunnar R.	161st Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Johnson, SPC Joseph D.	161st Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Johnson, SPC Matthew J.	618th Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Kisseloff, SGT Denis D.	1141st Engineer Company, 203d Engineer Battalion, 372d Engineer Brigade	Kansas City, Missouri
McGahan, 2LT Michael E.	Alpha Company, 1st Brigade Special Troops Battalion, 101st Airborne Division	Fort Campbell, Kentucky
Reed, SPC Jesse D.	618th Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Rodriguez, SGT Mario M.	264th Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina
Stanley, SGT Chase	618th Engineer Company, 27th Engineer Battalion, 20th Engineer Brigade	Fort Bragg, North Carolina

Proposed Fallen Engineers Memorial



One of the highest priorities of the Army Engineer Association (AEA) is to recognize all Army engineers who have given their lives in the defense of the United States of America. Equally important is to recognize those engineers who received wounds in combat resulting in the award of the Purple Heart. AEA is accepting donations to support the design and construction of a Memorial Wall for Fallen Engineers to be located in the "Sapper Grove" at Fort Leonard Wood, Missouri—home of the Army Engineer Regiment. To learn more, go to http://www.armyengineer.com/memorial_wall.html.



By Captain Russell Lehman and Captain Samuel Chiang

During the week of ENFORCE 2010, engineer leaders from across the Regiment gathered together at Fort Leonard Wood, Missouri, to discuss the future of the Regiment, commemorate its great accomplishments, and focus its efforts for the coming years. As the Regiment looked forward, it also took time to look back and honor and remember the engineers who had fallen in combat. The Fallen Sapper Memorial Tribute, conducted on 22 April 2010, was specifically designed to pay humble and respectful homage to the engineer Soldiers who died in combat from April 2009 to April 2010. In addition to those killed in action, the ceremony also paid tribute to the engineers slain in the Fort Hood, Texas, attack in November 2009.

The Fallen Sapper Tribute took place in the Fort Leonard Wood Memorial Chapel, which was originally built in 1942 and has been in use in one capacity or another since its construction. The chapel's private setting, simplicity, and proximity to the Engineer Memorial Grove enabled participants to feel the depth of solemnity inherent in the ceremony. Families, friends, and members of the Regiment were able to view photos of each Fallen Sapper in the chapel. Family members of the Fallen Sappers, who were seated by the photos of their Sappers, were joined by senior members of the Regiment, including the Chief of Engineers, Lieutenant General Robert L. Van Antwerp. Many other senior members of the Regiment were present and were joined by Soldiers from engineer officer courses and advanced individual training courses. It was the first time many of these Soldiers had attended a military memorial

tribute, so the ceremony allowed the new sappers to participate in and learn about how we honor those who have made the ultimate sacrifice. It was also a time for family members to see the honors bestowed on their loved ones, hear how much their service and sacrifice meant, and know that they will never be forgotten.

While engineer leaders reflected on the heavy burdens of responsibility that leaders face when Soldiers deploy into harm's way, and remembered their own experiences and their own fallen, the new engineers developed a greater understanding of the solemnity of service to the nation and how important it is to remember those who did not return.

Following the ceremony, the attendees accompanied the United States Army Engineer School Commandant and host of the event, Brigadier General Bryan G. Watson, out of the chapel to the Engineer Memorial Grove. Here, the Chief of Engineers and the Engineer Corps Command Sergeant Major, Micheal L. Buxbaum, placed a memorial wreath to designate the future site of the Engineer Memorial Wall. (See page 5.) Made of Missouri red granite, the wall—with the engraved names of sappers who have made the ultimate sacrifice—will serve as a permanent commemoration of the Soldiers and will ensure that they are never forgotten. 

Captain Lehman is the S-3 Officer in Charge, 169th Engineer Battalion, Fort Leonard Wood, Missouri.

Captain Chiang is the Executive Officer, 169th Engineer Battalion, Fort Leonard Wood, Missouri.



BUILDING MOMENTUM FOR THE FUTURE

By Ms. Shirley A. Bridges

Lieutenant General Robert L. Van Antwerp, 52d Chief of Engineers, began his address at the 2010 ENFORCE Conference by talking about the legacy of the Engineer Regiment to remind the attendees of what the engineers stand for.



“We’re going to talk together about some of the things important to the Regiment,” he said. “But first, you know, it’s always great to go back to your history and think about what we stand for.”

1775—Bunker Hill, Continental Army. President-to-be George Washington recognized the need for engineer capability and chose Colonel Richard Gridley as the first Chief of Engineers.

1802—West Point. This was the beginning of the Engineer Regiment as we know it today. We were just starting to explore the west, and we needed surveyors and engineers. Today, 51 or 52 percent of the Regiment’s officers come out of West Point—the others are out of the Reserve Officer Training Corps (ROTC) and the Officer Candidate School (OCS).

1824—Civil Works Mission. Some incredible things were going on in the Ohio River and the Mississippi River and, by Act of Congress, the Corps of Engineers—the Engineer Regiment—was given the civil works mission. Today, we have 12,000 miles of inland waterways that touch 41 states. And we have 241 locks and dams.

1914—Panama Canal. The Canal was started by someone else, but engineers finished it. Now, they’re building a new lock, and we’re advising on that.

1941—Construction Mission. Today, we do the construction—to include some for other Services—on 103 military installations.

1943—The Pentagon. We built the Pentagon in Washington, DC, in 15 months; now, it’s going to take 13 years to renovate it.

1961—National Aeronautics and Space Administration. We built the NASA facility.

1986—Water Resources Development Act. This authorization document tells the Corps of Engineers how to do what Congress wants them to do.

1986—Cost-Sharing Provision. This changed life in the Corps of Engineers. No longer can we say, “Here’s what needs to be done.” Now, there has to be a Congressman willing to put in a request and get it authorized and appropriated.

2004—Standup of the Gulf Region Division. At its height, the Gulf Region Division had three districts in Iraq, but two of the three districts have been stood down. We’ll be in the third one at least until December 2011. In Afghanistan, we have two districts and a deployable command post—the 412th Engineer Command.

2005—Katrina. This effort involves the largest design-build civil works project ever for the Corps of Engineers—more than \$800 million.

2009—Greatest Amount of Work Underway. We have 37,000 people in the Corps of Engineers—more than 100,000 in our Regiment. And we have great partners—400,000 contracts, worth \$45 billion.

"That's our history," Van Antwerp said. "That's where we come from. What a wonderful history."

He remarked that a lot of those in the audience know that when he looks at an officer, a noncommissioned officer (NCO), or a civilian, he has 4 Es in his head. He explained that as follows:

- **Energy.** Energy starts with fitness, and you have to keep that fitness up every day until it becomes a lifestyle.
- **Energize.** Energizing others is leadership. Influence. A lot of times it's taking people where they might not want to go, but if they buy into you they're likely to buy into where you're taking them.
- **Edge.** The edge is hard to describe, but when you see it, you know it. It's those people who will say, "I'll be in that pilot program. I want to be out there—I want to be experimenting for the future." They're innovative. Visionaries.
- **Execute.** When you have a \$45 billion program, the ultimate test is not going to be all the great disciplined thought you put into it, or whether you have great people. It will be what's left. It's why the buildings we built back during World War II—that were intended to be used for five years—are still standing in some places. It's because they were done right. That's the test.

Van Antwerp gestured as if drawing an imaginary circle that was going counterclockwise like a flywheel. He said that if a flywheel is heavy enough and you get it rolling, it's pretty hard to stop it. But it's very hard to get started. So you have to make sure it gets started, and when you get it started, you want it to go in the right direction—because it's hard to redirect.

He asked the audience to imagine a line drawn from one end of the circle to the other, right through the middle. Then he asked them to mentally divide the top half of the circle into thirds—to represent disciplined people, disciplined thought, and disciplined action—and to divide each third into two parts. Then he explained his "drawing." (The figure to the right, from the book *Good to Great* by Jim Collins, depicts this.)¹

Disciplined people. One part is about leaders and the other is about getting the right people in the right seat of the bus. How do we select, develop, retain, promote—all those things of great people?

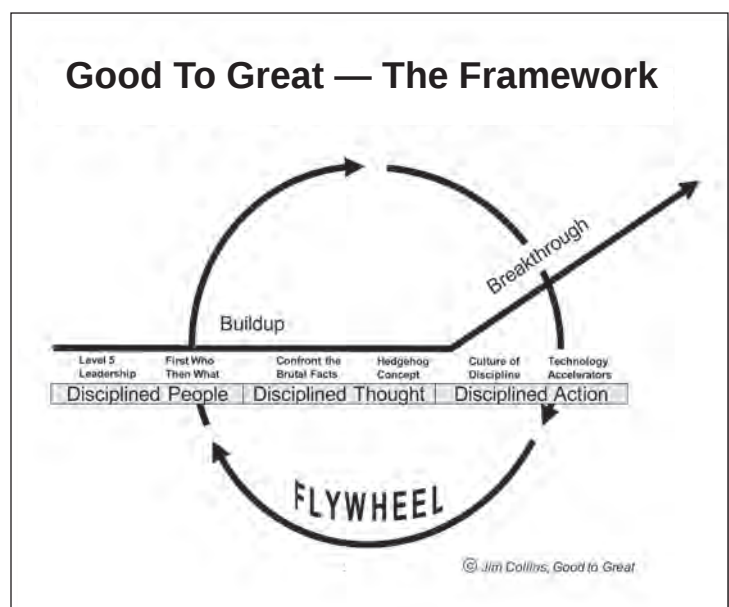
Disciplined thought. One part is similar to an after action review (AAR)—confront the brutal facts; look at yourself really hard. Find out where your pros and cons are, and that is where you start to establish your campaign plan for the future. The other part is called "the hedgehog" in *Good to Great*.² Keep your focus; look at your core—what made you great—and if that core isn't changing, invest in that core.

Disciplined action. One of the marks of a great organization is that you tell people what you're going to do, and you do what you say. That's the ultimate mark: You deliver. The second part, though, has to do with innovation and technology acceleration. That is what the edge is. And it isn't about boxes and electrons; it is about having that edge of innovation.

"Now there's something that happens when you get the right people on the bus—and the right leaders, the Level 5 leaders," he said. "When you get that about midway through the *disciplined thought* part, there's a line that goes from the center line up to the flywheel. Where it intersects the flywheel, there's a picture of greatness, but it doesn't mean that you're done, or complete."

Van Antwerp said that we're tracking a lot of things in our campaign plan in the Corps of Engineers, and we're saying when we're complete. When we get close to that point, we're going to say, "What's next? What's the next greatness part there?" But when you go up on that line, one of the things you have to do is have a picture of where that line intersects with the flywheel. And once you get it going, you get momentum. "We have momentum in the Corps of Engineers," he said. "We have momentum in our Regiment right now that we want to keep. In fact, we want to get it going faster and faster."

"I want to talk about something that's kind of near and dear to my heart," Van Antwerp said, "because I think it's on the cutting edge in the future—*how we select and assign people*." He added that "we have this thing called the Green Pages,"³ and he had four slides to show the audience to expose them to that concept and get them to think about where we're going. "First of all," he said, "using the 'steal (good) ideas shamelessly (SIS) principle,' we stole this idea from IBM, who has what they call the Blue Pages.⁴ They use that to put people in the right seats of the bus, using the vernacular of the book *Good to Great*."⁵



Slide 1 showed what is available, personnel-wise, and it might be called the “supply side.” Young officers in the Engineer Captains Career Course (ECCC) and the Basic Officer Leader Course (BOLC) have been asked to put in their supply side—where they have expertise. Then units are asked to put in their talent requirements—what do they need? Is it a civil engineer? A professional engineer (PE)? The idea is to capture those requirements so we can see what is needed out there. And it’s about the Green Pages.

Slide 2 consisted of supply side statements that came from the young officers from ECCC and BOLC. For example, “Explosive hazard team leader in Task Force Troy. Taught Counter-IED and tactical....” Another student wrote, “Prior experience... Project Manager...DC /Baltimore metro area...internationally. Experience with federal and government....” “That’s a lot of talent right there that we would have never known about,” he said. “That’s what we want to capture: What’s the talent out there?”

Slide 3 concerned how we match up the talent with the needs. “We’re actually going to fill 31 officer positions out of these classes in session right now, based on Green Pages,” he said. “We’re running a pilot that maybe the Army eventually will go to. Do we have the edge? This is a place where we have a chance to be on the cutting edge—matching talent with needs and requirements.”

“I think that if you’re going to have a great organization, everyone has to feel as if he contributes,” Van Antwerp said. “So we also took a little survey as we were doing this talent input. We asked ‘How important is it that the Army treats you as a unique individual?’ Ninety-one percent said that it is ‘very important’ or ‘important.’ ‘How important is it that units provide detailed descriptions of their job requirements?’ Ninety-seven percent said they want to know what they are getting into.”

Slide 4 contained two other questions: “What is most important to you when looking for your next job assignment?” To most of the young officers, it was “the job.” The second question was “What am I going to do next?” Van Antwerp thinks that we’re going to have an interesting dilemma: Units are beginning to have longer dwell time between deployments, but there are young people coming up who are saying, “I want to go—I want to be part of this fight; that’s why I came in.” “So we have to get this right. We want to treat them as unique individuals, and we want to match up with their positions. We’re going to give them a lot of say in this, but that’s where we’re headed. It’s all about selecting the right people and getting them in the right positions.”

“There are a lot of ambiguities out there,” he continued. “Could we prepare them better? I think we have to be listening to this group and bring them on our team and do the development—count on the School for a lot of that, but over on the USACE side, we have \$45 billion worth of projects. We need to get our young officers and NCOs over into the Corps for a period of time. What we do well is project management, and we do contracting well. If you’re in-theater and you have funds for a project, you need to be able to manage projects so you’ll be better equipped. So we have to

work this part together. That’s about the *disciplined people* part.”

“Now let’s talk about *disciplined thought*,” Van Antwerp said. Then he asked BG Bryan Watson, Engineer School Commandant, to talk about the *disciplined thought* he’s putting into the School, on how we might train our officers in the future.

BG Watson said that to train officers in the future, we have to recognize that they’re unique—that they all come with different education and different training. “However,” he said, “we have a one-size-fits-all approach to how we train our officers and NCOs. And we’re not even giving them credit for their previous education when they come into the Corps or when they come into the Captains Career Course for a second assignment.” He said that Soldiers who are going from a construction outfit to a sapper outfit, or vice versa, are given the same instruction. And so they begin to see less relevance. But now the School is looking at how to take a university approach—really put three people in charge of tailoring that program:

- *Former commander.* Let the former commander help the Soldier see where his or her weakness is and tailor the program. That’s part of Green Pages.
- *Future commander.* This is the one who will get the Soldier. Can the commander tell us what the Soldier needs to be trained in so we can use that to tailor the program?
- *Soldier.* What is that person’s passion? Where does the Soldier see his or her own strengths and weaknesses? That has to figure largely in the program.

Van Antwerp thanked BG Watson and commented that one thing the Commandant mentioned was passion. “Green Pages isn’t just sticking you in a hole because on paper it looks like you fit,” he said. “There’s also that other piece. Because what does passion do to your talent? It energizes it.”

“Okay,” he said, “that’s disciplined thought going into the School. Let me tell you a little bit about disciplined thought in USACE. First, how do we eliminate the backlog of maintenance or repair? That’s a big deal for us. One of the other things to be thinking about is that we hired 8,213 people last year from outside the Corps. I’m so proud that we’re building the Corps to last. About 3,000 of those new people came pretty much out of college or what we would call “early entry.” And we got a lot of journey people. It takes a lot of disciplined thought on how to bring new people in. Just like a unit commander: How do you bring new troops into the unit when you have a busload of people coming out of advanced individual training (AIT)? They get shipped to your unit during reset, and you don’t have your NCOs yet—How do you do it? How do you bring them into your culture?”

Van Antwerp remarked that one of the unique things we’re finding is that the new people set up their own classes—in a way. “And I would say the same thing

happens in the troop unit,” he added. “When you get a busload of troops, they identify with each other. They’re all in the same boat. There’s some teamwork there that I think is good. Before, they might have been isolated—single replacements coming in, and they’re in their barracks room, and they don’t fit. Now they fit, because there’s another 50 just like them right there. But how do you bring those 50 people in? That takes disciplined thought.”

He said that the last thing he wanted to talk about was *disciplined action*. “*Disciplined action* means how do you execute a \$45-billion program? How do you, on the tactical side, get your units ready so that you can do the mission you’ve been given? That’s where leaders come in—you have to know what your plan is and then how to execute that plan.”

“Everybody needs somebody to come alongside them,” he said. “We know in the Corps that each of these 8,200-plus new people has a sponsor, everyone is being brought online, and the way we’re growing our force is that we’re getting them out to get experience. And when they’re on a job site to watch work being performed—such as a lock repair—it becomes a classroom. If we think like that, we’ll have this force long into the future.”

“Thank you very much,” he said in closing. “This has been a privilege—a ‘get-to’—for me. I love being with this Regiment—this tribe—as BG Watson calls it. And we need to continue to grow the tribe. The country needs 160,000 engineers to graduate from our universities and come to work in our industries and with *us*. Last year, we graduated 75,000. So the challenge is there: We need great

engineers. But the *Building Great Engineers* campaign is not just for us—this is for America!” 

Ms. Bridges, managing editor of the Engineer Professional Bulletin, has been a member of the bulletin staff for almost 16 years. A former recipient of the Secretary of the Army’s Editor of the Year Award, she holds a bachelor’s from Missouri State University, Springfield, Missouri.

Endnotes

¹Jim C. Collins, *Good to Great*, Harper Business: New York, 2001, p.12.

²Collins, pp. 90–119.

³A personnel tool designed to display an individual’s talents, experience, and most desired assignments beyond current capabilities. Rather than contracting this initiative, Army Knowledge Online (AKO) is improving the “My Profile” section, which will become the foundation of the Green Pages. Supplied with this additional data, the Human Resources Command will be better informed in selecting the most qualified individuals for available positions or for consultation or reachback support.

⁴An employee directory originally designed to replace IBM’s telephone directory. It is now used to find the right people to get a job done. <http://www.intranetjournal.com/articles/200209/pij_09_25_02a.html>, accessed 14 August 2010.

⁵Collins.

(“Clear the Way,” continued from page 2)

LOE #4: Develop Engineer Capabilities in Support of Full Spectrum Operations (FSO)

DP 4-02: Consolidate FM 3-34, Engineer Operations. Rewrite an engineer keystone manual incorporating the engineer framework of the four lines of engineer support:

- Assure mobility
- Enhance protection
- Enable expeditionary logistics
- Build capacity

In addition, influence paradigm shift from functions to disciplines.

DP 4-04: Implement the Brigade Combat Team (BCT) Engineer Battalion. Implement a major change in Army force structure that gives every BCT and engineer battalion headquarters one combat engineer company and one construction company organic.

DP 4-21: Transition Operational Need Statement (ONS) Equipment to Programs of Record (PORs). Identify ONS equipment/capabilities, in particular improvised explosive device defeat (IEDD) equipment that has been developed and procured for the current fight. Determine

what equipment needs to become enduring equipment in engineer tables of organization and equipment (TOEs) and get it transitioned to official Army programs so we can train them in United States Army Training and Doctrine (TRADOC) schools.

LOE #5: Enhance Sense of Regiment

DP 5-02: Establish a Wounded Sapper Program. Establish a program that helps wounded engineers make transitions and get further education, employment, and other life services.

DP 5-06: Renovate the Engineer Museum. Develop a museum program capable of educating and inspiring members of the Regiment and preserving engineer artifacts in preparation for certification.

As I said, this is not the full list of DPs and only gives a sample of the main focus areas for this year’s efforts. I can’t emphasize enough that this has to be YOUR Regimental Campaign Plan; YOU have to be an active participant in Achieving the Vision; YOU have to fulfill your responsibilities within this profession and shape the debate about the future and the decisions we will make.

Lead to Serve. Essayons!

BUILDING GREAT ENGINEERS SUCCESS

By Captain Joshua A. Morris and Lieutenant Colonel Phillip Kaufmann

Beginning with the American Revolution, our nation has relied on engineer leaders to develop plans and marshal resources to overcome the most serious challenges and threats to our society. In the early days of the republic, this included surveys for roads and canals to carve a transportation infrastructure where there was once only wilderness. Later, it added railroad surveys and flood control to further harness the nation's resources. At the same time, as the United States fought in one conflict after another, engineers facilitated the movement of friendly forces; impeded the movement of enemy forces; and built infrastructure that was needed to sustain the force. Their accomplishments ranged from the Alaska–Canada (Alcan) Highway (now called the Alaska Highway) and the Ledo Road to the Manhattan Project, which developed the atomic bomb. Today, engineer tools have changed, but not our basic mission.

In order to maintain and build on the unstoppable momentum of the Engineer Corps, we developed the *Building Great Engineers (BGE)* initiative to create and sustain engineer leaders who are able to assess tasks and challenges, develop plans to accomplish those missions, and assemble the resources needed to achieve success. Realization of the Engineer Regimental Campaign Plan then came about as we realized success in *BGE* and refined our aim point. More important, investments in people, training and education, and leader development were interwoven with our campaign plan lines of effort as a means of maintaining successful momentum experienced with *BGE* (see figure on page 12).

Achieving Success

The *BGE* initiative began in 2008 after the need was identified for people of great character and values who are fit, tough, smart, adaptive, energetic, and committed to the cause. This “cradle-to-grave” approach focused on the development and management of our most precious resource—people. Five focal points have been the drivers for success: accessions, training and education, employment, retention, and strategic communications.

Accessions

As a key starting point, our accessions efforts have included dialogue and engagements with both current and

potential engineers. A healthy professional debate about our future from leaders (young and old), officers, warrant officers, and noncommissioned officers across the Engineer Regiment helped add to the momentum. We have seen an 18 percent increase in the number of degreed engineers accessioned into the Regiment (from 38 to 56 percent) in the past year. Reserve Officer Training Corps (ROTC) contributions are now 43 percent degreed engineers, and West Point contributions are 70 percent degreed engineers. Our Engineer Personnel Propensity Office (EPPO) continues to engage selected universities with heavy engineer and math degree programs. Their recent accession efforts included Warrior

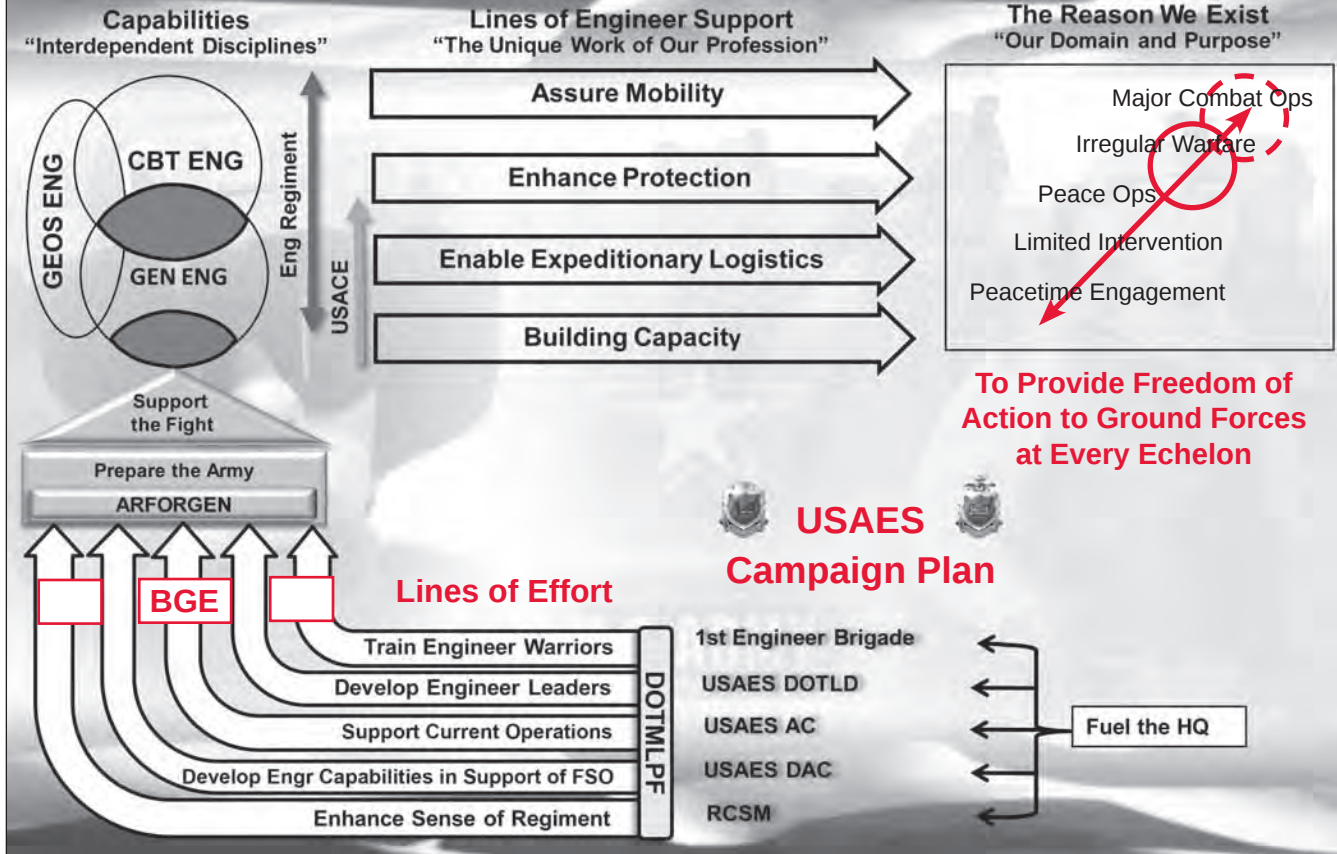
“The BGE initiative began in 2008 after the need was identified for people of great character and values who are fit, tough, smart, adaptive, energetic, and committed to the cause.”

Forge, West Point Tailgate, senior leader panels, and engineer professional organizations. We are anticipating additional positive movement in expanding visibility of the Engineer Regiment by providing opportunities for cadets to work with the United States Army Corps of Engineers (USACE) and visit Fort Leonard Wood, Missouri, to focus on understanding engineer educational development from private to noncommissioned officer to officer. With these efforts, we expect to see additional movement toward increasing the number of degreed engineers in the Regiment.

Training and Education

We have made remarkable strides in maximizing learning effectiveness by working toward a university approach model to training delivery. Other initiatives include the Virtual Battlespace System (VBS2™) development versus PowerPoint briefing presentations, Engineer Captains Career Course (ECCC) and Engineer Basic Officer Leader Course (EBOLC) redesign, joint assault bridge (JAB) and assault breacher vehicle (ABV) training, the Sapper Campus, counter-improvised explosive device (C-IED) training

A Campaign Plan To Achieve the Vision



institutionalization, and opportunities for the Prime Power School move and potential for the Geospatial School move to Fort Leonard Wood. The integration of VBS2 into our classrooms will revolutionize instruction by making it more interactive with our students. Key to our continued success will be a focus on collaborative problem-solving skills in which instructors facilitate rather than lecture, including peer-to-peer learning, given the enormous amount of operational experience that our leaders have. The bottom line can be expressed in three words: rigor, relevance, and relationships.

Employment

In addition to training, we have worked to better employ the existing talent in the Regiment. There has been solid progress toward increasing employment visibility through our Green Pages initiative that better aligns officer supply and demand. As a result, the Army—and specifically our Regiment—will gain visibility of officers' skill sets, education, life experience, and other background information that is currently not maintained in legacy Army personnel systems. In essence, Green Pages matches the talent it needs (demands) with the talent it already has (supply). Officers communicate their desired future assignments and then search all available positions. More important, officers can judge the emerging skill demands and

develop themselves to better meet them. In addition, we have finally established skill identifiers to support career development, officer tracking, and talent management as part of a military occupational change of structure (MOCS) proposal being submitted through the United States Army Training and Doctrine Command (TRADOC) to the Department of the Army in October 2010. Officers will be managed and assigned to coded positions, based on officer talents (skill identifiers), thus allowing our Regiment to fill coded positions with officers who possess the right mix of skills.

Not only have we worked to better align officer talent but also to align engineering capabilities with needs across the full spectrum of engineer operations. This includes the recently approved implementation of the brigade engineer battalion into maneuver brigade combat teams (BCTs). This will provide needed problem-solving ability to maneuver forces at the brigade level. In addition, we have worked to return selected leaders with operational experience back to the United States Army Engineer School (USAES) and USACE to support Warfighter function forums. We have also begun the military working dog initiative to further provide deployed engineer units with the capabilities to successfully complete their mission.

Retention

Relationships are key, even more so in the retention effort. As we work toward linking career advisors and mentors with junior officers, we are seeking discussions on specific coaching and career or technical advice and engineer-specific professional development opportunities. Branch mentorship for junior engineers—especially “outlying” officers who work outside the normal engineer chain of command—remains a tough challenge. The framework for these discussions lines up along Active Army, United States Army Reserve, and Army National Guard experiences and footprints. Engineer brigades, battalions, and districts focus on the active duty portion. First Army East and West Regions handle Reserve coverage, and National Guard coverage is naturally aligned by states.

We have also leveraged higher education with the Missouri University of Science and Technology (MS&T) engineering master’s degree program as a means of increasing officer retention. Notably, MS&T recently opened an explosives engineering master’s degree program, for which many of our officers qualify. The MS&T explosives engineering certificate program is designed to provide formalized education in the area of explosives engineering. Students are exposed to the theoretical and practical approaches of explosives engineering and learn analysis and design of explosives-related systems—both natural and man-made structure effects. The explosives engineering certificate program is open to all persons holding a bachelor of science, master of science, or doctoral degree and who have a minimum of 12 months of post-bachelor of science professional employment experience.

Strategic Communications

We have made enormous progress in strategic communications. This continues to enhance our sense of Regiment by strengthening our ties with engineer professional organizations, renovating our Engineer Museum, and establishing wounded engineer and fallen engineer programs. Of particular note is our “open-arms” commitment to engineer veteran reunions. During one recent event, the 299th Engineer Battalion of Vietnam, the Defenders of Dak To, traded war stories with current students of the ECCC, Advanced Leader’s Course (ALC), and EBOLC.

Throughout the last few years we have also implemented several knowledge management mediums:

- **USAES Public Website:** Public face of USAES. Contains historical and command information, links to USAES resources (public and protected), and current events and announcements appropriate for public consumption.
- **Battle Command Knowledge System (BCKS) Engineer Forum:** Contains engineer-related discussion forums and document storage. Requires Army Knowledge Online (AKO)/Defense Knowledge Online (DKO) credentials to access.
- **Engineer School Knowledge Network (ESKN):** Primary portal to essential engineer resources. Requires AKO/

DKO credentials to access. Contains document storage, links, announcements, and request-for-information features. ESKN was recently redesigned to better suit the needs of engineers (replaced Sapper 411).

- **Engineer Blast:** Monthly newsletter from the Army Chief of Engineers. USAES contributes updates and news related to training and upcoming events.
- **Commandant’s Forum (milBook):** Site for collaboration with senior engineer leaders from around the globe.
- **Other milBook Groups:** Senior Engineer Warrant Officer, EPPO, USAES Historian, and Engineer Force (ENFORCE). Requires AKO/DKO credentials to access.
- **USACE Reachback:** Requests for information and support provided by Engineer Research and Development Center (ERDC).

All of the above can be accessed by visiting ESKN at <<https://www.us.army.mil/suite/page/637460>>.

Challenges

Along with this progress, there are still challenges. In our accessions efforts, we have found that geographic and expanded recruitment areas are both an opportunity and a test of resources. We are always looking for assistance with these engagement opportunities. Accessions estimates must also take into account that there is an increasing percentage of new lieutenants coming from Officer Candidate School (OCS) (approximately 23 percent of our incoming officers over the last eight years), and the most common degree for OCS is criminal justice. Given that OCS branching is one of the areas that we least control, we must aggressively seek a means of providing math and science educational opportunities to our enlisted Soldiers who may become officer candidates. Incentives for professional development, such as project management professional (PMP) and professional engineer (PE) preparation and test fee and annual fee reimbursement, would greatly help our retention efforts. Education opportunities for USACE-sponsored courses is difficult to obtain but key to *BGE* leader training and education. Our pursuit of Army Learning Concept (ALC) 2015 objectives (temporary duty [TDY] modules) to support Army Force Generation (ARFORGEN) has the potential to increase the opportunity for university-style “credits” for resident and distributed learning courses available in USACE, Department of the Army, and Department of Defense. Finally, we are broadening assignment and reemployment of wounded warriors in the Regiment. Although Fort Leonard Wood is rapidly expanding its medical facilities, it is still unable to meet the needs of many of our wounded warriors. Nonetheless, we are now working on providing them with opportunities at USACE project sites near their hometown and necessary medical facilities. All of these challenges are part of our continuing efforts to build great engineers.

(Continued on page 19)

2010 Best Sapper Competition

By Mr. Luke Waack

One of the toughest challenges an engineer Soldier, or sapper, could ever have is vying in and winning the Best Sapper Competition—which in 2010 was a six-day, three-phase event at Fort Leonard Wood, Missouri, covering the full spectrum of engineer operations and infantry tasks. Moving more than 50 miles on foot, the sappers were on nearly continuous operations, with little “down time” between events that ran the gamut of physical and mental challenges. The competition began with two-person teams performing the most repetitions possible of push-ups, sit-ups, and pull-ups in 15 minutes—five minutes in each category—then continued with sappers running more than four miles in Army combat uniform and interceptor body armor vest and carrying a dummy M4 carbine.



Photo by Luke Waack

Above: Second Lieutenants Jonathan Kralick (right) and Jeffrey Laughlin, 82d Airborne Division and 20th Engineer Battalion, respectively, Fort Bragg, North Carolina, move a stump weighing hundreds of pounds during the Log Cut and Carry event of the X-Mile Run and the final phase of the 2010 Best Sapper Competition. Kralick and Laughlin took second place.

Left: Captain Joseph Byrnes (left) and Captain Jason Castro, both Charlie Company, 554th Engineer Battalion, tie up their poncho raft at TA 250, before helo-casting. Byrnes and Castro went on to win the 2010 Best Sapper Competition.



Photo by Luke Waack



Photo by Visual Information Center

Second Lieutenant Jay Beeman (right) and Captain James Gibbs (left), 11th Engineer Battalion, Fort Benning, Georgia, took third place in the 2010 Best Sapper Competition.

After the first day of challenges, ranging from knot tying to manual breaching of obstacles to evacuate a casualty, the field was narrowed to 20 teams. After the second day, only 10 teams were left. Of those teams, only one could be named Best Sapper.

A previous Best Sapper Competition winner returned to the champion's stage on 21 April at Fort Leonard Wood during the 2010 ENFORCE Conference. Captain Joseph K. Byrnes was a winner in the 2006 competition. He and his teammate this year, Captain Jason D. Castro, were both from Charlie Company, 554th Engineer Battalion, Fort Leonard Wood, at the time of the competition. They beat out 28 teams for the title of "Best Sapper" after more than 50 hours of almost nonstop physical and mental exercise in dozens of Soldier and engineer-specific skills challenges. The teammates used the Warrior Ethos as a guiding principle. They said that they treated the competition as a mission—they received a mission to conduct a three-day competition, gave it everything they had, and left nothing on the course. By working together, they were able to figure out what each of them was good at, and then they came up with a process to eliminate mistakes. They believe that was the key to their success.

Of the six phases of the competition, the pair won the demolition and the land navigation portions. For being named best sappers, they were awarded the Army Meritorious Service Medal and the Army Engineer Association's Bronze deFleury Medal.

The second place team, Second Lieutenant Jonathan Kralick, 82d Airborne Division, Fort Bragg, North Carolina, and Second Lieutenant Jeffrey Laughlin, 20th

Engineer Brigade, Fort Bragg, won the road march and Sapper Stakes phases of the competition and earned Army Commendation Medals.

Captain James Gibbs and Second Lieutenant Jay Beeman, 11th Engineer Battalion, Fort Benning, Georgia, took third place and were awarded Army Achievement Medals. Captain David Vasquez and First Lieutenant Brett Fuller, 54th Engineer Battalion, Bamberg, Germany, won the non-standard physical fitness test. First Lieutenants Brandon Darroch and Stephen Kraus, 326th Engineer Battalion, Fort Campbell, Kentucky, won the X-Mile Run phase of the competition.

When asked why he entered the competition, one captain replied, "Pride, more than anything. Because I believe there's no better Soldier than an engineer Soldier, and if you're the best here, you're the best Soldier—period."



Mr. Waack was a staff writer and assistant editor for the Fort Leonard Wood Guidon, as well as the beat reporter for the fort's engineers, when he wrote this article. He is currently the editor of the Arctic Warrior, the authorized newspaper for Joint Base Elmendorf-Richardson, Alaska. Before joining the Guidon, Mr. Waack was an Army broadcaster for six years and served in Texas, Italy, and Afghanistan.





Regimental Awards

Each year we recognize the best engineer company, lieutenant, warrant officer, 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 2009 selection boards for the Itschner, Outstanding Engineer Platoon Leader (Grizzly), and Outstanding Engineer Warrant Officer Awards, the Sturgis Medal, and the Van Autreve Award:

Active Army

Itschner Award: Bravo Company, 9th Engineer Battalion, 172d Infantry Brigade, Grafenwoehr, Germany.

Outstanding Engineer Platoon Leader (Grizzly) Award: United States Army Europe (USAREUR) nominee, First Lieutenant Brent J. Johnson, 500th Engineer Company, 15th Engineer Battalion, Schweinfurt, Germany.

Outstanding Engineer Warrant Officer Award: United States Army Forces Command (FORSCOM) nominee, Warrant Officer Two David M. Reeves, Headquarters Company, 37th Engineer Battalion, 20th Engineer Brigade, Fort Bragg, North Carolina.

Sturgis Medal: USAREUR nominee, Sergeant First Class Ricardo Ranger, Charlie Company, 40th Engineer Battalion, Baumholder, Germany.

Van Autreve Award: FORSCOM nominee, Specialist Michael A. Tellez, 104th Engineer Company, 62d Engineer Battalion, 36th Engineer Brigade, Fort Hood, Texas.

LTG John W. Morris Outstanding Civilian of the Year Award: United States Army Corps of Engineers (USACE) nominee, Mr. Curtis A. Heckelman, United States Army Corps of Engineers.

United States Army Reserve

Itschner Award: 321st Engineer Detachment, 844th Engineer Battalion, Bethlehem, Georgia.

Outstanding Engineer Platoon Leader (Grizzly) Award: First Lieutenant Jennifer L. Barker, 770th Engineer Company, Penn Yan, New York.

Outstanding Engineer Warrant Officer Award: Warrant Officer Two Timothy L. Conley, Assistant Chief of Staff for Installation Management (ACSIM), Washington, D.C.

Sturgis Medal: Staff Sergeant Jason L. Moldan, 401st Engineer Company, 489th Engineer Battalion, Oklahoma City, Oklahoma.

Van Autreve Award: Specialist Zachary Stenzel, 401st Engineer Company, 489th Engineer Battalion, Oklahoma City, Oklahoma.

Army National Guard

Itschner Award: Headquarters and Headquarters Company, 220th Engineer Company, Missouri Army National Guard, Festus, Missouri.

Outstanding Engineer Platoon Leader (Grizzly) Award: First Lieutenant Jason R. Davis, 220th Engineer Company, Missouri Army National Guard, Festus, Missouri.

Outstanding Engineer Warrant Officer Award: No nomination.

Sturgis Medal: Sergeant First Class John E. Roberts, 220th Engineer Company, Missouri Army National Guard, Festus, Missouri.

Van Autreve Award: Specialist Ethan S. Coulson, 220th Engineer Company, Missouri Army National Guard, Festus, Missouri.

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 at ENFORCE 2010 at Fort Leonard Wood, Missouri.

Regimental Command Council

By Mr. James R. Rowan

The Regimental Command Council (RCC) conducted on 22 April during ENFORCE 2010 at Fort Leonard Wood, Missouri, may have seemed like a new event to some people. In actuality, the RCC is the new name for the combined Council of Colonels and Council of Command Sergeants Major (CSMs). Historically, these have been two separate forums but, based on comments from the Council of CSMs in April 2009, they were combined during ENFORCE 2010. The United States Army Engineer School Commandant hosts this event twice a year: once during ENFORCE and once during the fall. This year, the Regimental Chief Warrant Officer elected to hold a separate Council of Warrant Officers to home in on some of the unique officer issues the Regiment is facing.

The target audience for the RCC is brigade-level commanders and CSMs; colonel-level district commanders; topographic engineering center chiefs of staff and deputy chiefs of staff for operations and plans; key engineer billets at Headquarters, Department of the Army; Army Service Component Command engineers; and the doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) domain chiefs. Approximately 65 people attended the RCC at ENFORCE 2010.

The key briefings provided during the RCC included—

- Commandant's priorities and the Regimental Campaign Plan.
- Update on the brigade engineer battalion.
- Engineer brigade training and certification.
- Counter-improvised explosive device (C-IED) threat briefing (classified session).
- United States Army Forces Command issues/sourcing.
- Unit history programs and requirements.
- Proposed Engineer Captains Career Course changes.
- Geospatial intelligence and geospatial update.

All of these briefings are available for viewing at the Army Knowledge Online (AKO) password-protected Engineer School Knowledge Network (ESKN) website. The feedback from briefing attendees was overwhelmingly positive, with many expressing a desire to make it a 1 1/2- or 2-day program at future ENFORCE conferences.



Regimental Command Council during ENFORCE 2010

The next meeting of the RCC is scheduled for 17–18 September at the North Dakota Army National Guard's Regional Training Institute at Devils Lake, North Dakota, one of the premier engineer training sites in the country. The event will have the same target audience listed previously, along with engineer chief warrant officers five (CW5). This will be a great opportunity to catch up on the latest status of the Regimental Campaign Plan and other key initiatives that are underway. Continue to follow the *Engineer Blast* (a bimonthly e-mail newsletter), the Commandant's Forum,¹ and the ESKN site for additional information and registration instructions for the September RCC. For more information about the RCC, contact the author at <james.rowan@us.army.mil>.



Mr. Rowan is the Deputy Commandant, United States Army Engineer School. Previously, he served as the Assistant Technical Director for Military Engineering at the United States Army Engineer Research and Development Center (ERDC), Vicksburg, Mississippi. Other key duty positions include Commander, ERDC; Commander, 1st Engineer Brigade; Commander, 54th Engineer Battalion; and Commander, 16th Engineer Battalion. A retired United States Army colonel, he has served in Operation Iraqi Freedom both as a military officer and a civilian.

Endnote

¹The Commandant's Forum is a by-invitation, web-based discussion board for senior leaders of the Engineer Regiment. All colonels and above have been invited through their AKO e-mail accounts to participate. Anyone who has not received this invitation can contact Mr. Doug Fowler at <douglas.fowler@us.army.mil>.

The Regiment Engages With Universities

By Major Karl Hatala

In the fall of 2009, the United States Army Engineer Personnel Proponency Office (EPPO) initiated a series of university engagements to recruit more degreed engineers into the Engineer Regiment. This effort supports the *Building Great Engineers* campaign, which established increasing the accession rate of degreed engineers as one of its goals. The EPPO team specifically targets schools with reputable engineering programs so that team members can directly engage with cadets and other students majoring in engineering. Throughout these engagements, the team also encourages high-quality students who are not pursuing engineering degrees to consider joining the Engineer Regiment.

Each engagement consists of briefings to small groups of students to inform them of the diverse and unique capabilities provided by the Engineer Regiment and the wide range of opportunities available to those who serve in it. Though the EPPO team presents some of the same information to cadets between their junior and senior years during annual branch orientation days at Fort Lewis, Washington, and West Point, New York, these new engagements enable the team to interact with students in their freshman and sophomore years. By engaging students earlier in their university experience, the EPPO team gives them more time to make more informed decisions about what path they will pursue following graduation.



A representative of the United States Army Corps of Engineers talks to ROTC cadets about opportunities in the Engineer Regiment.

These university engagements also enable the EPPO team to serve as engineer scouts, gathering information that paints a better picture of the challenges to the accession of more degreed engineers into the Engineer Regiment. For example, The Pennsylvania State University Reserve Officer Training Corps (ROTC) faculty informed the team that some engineering students who want to serve in the Engineer Regiment might be unable to do so because of the way the accession process works. The ROTC faculty pointed out that a cadet who earns a lower grade point average in a demanding engineering curriculum probably will not be as competitive for an Active Army engineer branch slot as a cadet who earns a higher grade point average in a less academically challenging nonengineering curriculum.

The effectiveness of this university engagement effort may not be easy to measure immediately, but based on the number of students who approached the team during the informal question-and-answer sessions following the briefings, it appears to be a worthwhile effort. However, it faces some challenges. One such challenge is that the EPPO university engagement team currently consists of just three senior noncommissioned officers (NCOs). These NCOs represent the Engineer Regiment in a professional manner, but they must rely on augmentation to provide an officer's perspective during the engagements. The EPPO team has sought augmentation from serving members of the Engineer Regiment who are alumni of the universities visited, but participation has been limited, presumably due to ongoing operational requirements. Perhaps a habitual relationship could be established with the Engineer Captains Career Course and the Command and General Staff College to seek officers who can participate in this effort.

Overall, the strategy to engage with universities appears to be a good one that may only require refinement to yield greater benefits. For example, as relationships with universities develop, ideas or opportunities may be discovered that will help advance other parts of the *Building Great Engineers* campaign. The engagements could also promote greater understanding between military engineers and their civilian counterparts. At a minimum, they will offer opportunities to meet prospective members of the Engineer Regiment and provide a better understanding of how to shape it.



Major Hatala recently completed Intermediate Level Education at the United States Army Command and General Staff College, Fort Leavenworth, Kansas, and is now serving with the 10th Mountain Division (Light Infantry) at Fort Drum, New York. He holds a bachelor's in civil engineering from The Pennsylvania State University.



("Building Great Engineers," continued from page 13)

Conclusions

More than any other branch, engineers provide that bridge between what the maneuver force is able to achieve now and what the maneuver force needs to achieve tomorrow. When the maneuver commander calls for his engineer, that engineer must be a leader who can tackle any challenge—whether it is a question of clearing obstacles, shielding allied forces, or restoring infrastructure. To develop such a leader, it is critical that the Engineer Regiment continues to build on the momentum of the *BGE* initiative through five key approaches:

- Continue to access talented and motivated individuals for their entry into the Regiment by facilitating the move of potential engineers into the Engineer Corps.
- Continue educational opportunities—such as the VBS2 and our partnership with MS&T.
- Move programs like Green Pages from the trial stage into full implementation to increase market transparency and better employ our leaders with special skill sets where they are needed most.
- Seek a return on the Regiment's investment by retaining the talent we have fostered. To do this, senior leaders must take ownership of the branch mentorship framework and the responsibility for advising junior leaders. Use of existing continuing education opportunities is also a key to retention.
- Continue to enhance the sense of Regiment, not only by reaching out through knowledge management mediums but—more important—by bringing together our veterans with today's Soldiers and looking after the welfare of our wounded warriors as they have looked after the welfare of the nation.

The unstoppable momentum of these initiatives is the key to ensuring that the engineer becomes the weapon of choice, against even the most unpredictable battlefield obstacles on today's irregular battlefield. As engineers have always been the greatest builders, we must also be builders of the greatest engineers.



Captain Morris is the operations officer for the United States Army Engineer School at Fort Leonard Wood, Missouri. A recent branch transfer from the Infantry, he will attend the Engineer Captains Career Course in October 2011. He holds an associate's in business administration from Franklin University and a bachelor's in history from Columbus State University. He has managed multiple vertical construction projects, including two solar-powered homes.

Lieutenant Colonel Kaufmann has been the Director of Instruction at the United States Army Engineer School at Fort Leonard Wood, Missouri, since the 2008 Building Great Engineers initiative and previously served as Deputy Commander for Gulf Region-North District, Portland District, and Northwestern Division, USACE. He holds a bachelor's in civil engineering and a master's in engineer management from Missouri University of Science and Technology and is a graduate of the United States Army Command and General Staff College.

Creating a Professional Engineer Functional Area

By Major Martin J. Naranjo

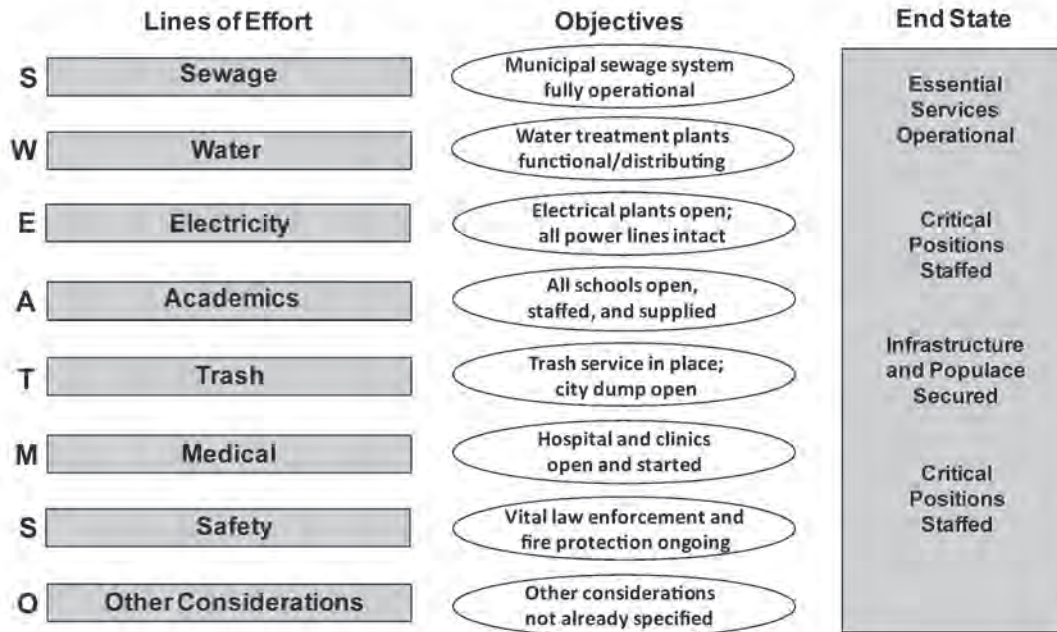
During the conflicts in Iraq and Afghanistan, there has been much talk about the need to rebuild the infrastructure of those two nations. Elements of infrastructure have become vital components in stability and counterinsurgency lines of operation. The sewage, water, electricity, academics, trash—medical, safety, and other considerations (SWEAT—MSO) model has provided commanders an outline to address essential services. The mission of designing, building, and repairing a nation's infrastructure is the role of engineers. Joint Publication 3-34, *Engineer Doctrine for Joint Operations*, defines general engineering as "the construction, repair, maintenance, and operation of infrastructure, facilities, lines of communication and bases, terrain modification, and repair." The engineer officer skill set in the United States Army's force structure does not address the need for competent and qualified engineers capable of using their professional knowledge to advise the brigade combat team (BCT) commander on general engineering operations in the current operating environment. The lack of engineer professionals is an important force management problem facing the Engineer Regiment, but a ready pool of engineer advisors and professionals could be created with a minimal increase to the current force structure. This could be done by creating a professional engineer functional area within the operational support career field. By focusing on education, experience, and professional credentials, it would provide officers with the necessary skills to act as more competent advisors and planners when dealing with reconstruction and infrastructure.

Educating Engineer Officers

The current process of educating engineer officers has proven less than perfect in meeting the need for general engineering experts. Far too many engineer officers have no formal training in civil or construction engineering beyond what is taught in the Basic Officer Leadership Course. Much engineer expertise exists in the forward engineer support teams and provincial reconstruction teams. What we lack is a single subject matter expert within the BCT who can provide general engineering advice to the commander on how best to use all the engineering capability within the BCT.

The current engineer Officer Education System should provide a wider breadth of the knowledge needed to plan general engineering operations. To better develop this skill, the Army should create a new professional engineer functional area that would allow a separate engineer career path based on education, training, and experience. Before entering this functional area, officers should serve at the company level in their specific branch. As in other functional areas, officers with an engineering degree could apply to enter a career path as a major to hone their professional engineer skills. If accepted into the functional area, those who hadn't yet done so could begin the process of attaining their professional engineer license by taking the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering exam. Once

Infrastructure Assessment and Survey Model



officers enter this functional area, they should attend Advanced Civil Schooling to receive an advanced degree in engineering management, civil engineering, construction engineering, or other relevant discipline. Officers could then move into a utilization tour on an installation or with the United States Army Corps of Engineers to develop their base of knowledge with construction, contracting, and infrastructure. This career track could be very appealing to cadets weighing their options during the accessions process.

Gaining Experience and Credibility

It takes many years of study and experience to develop a competent engineer in the civilian sector. As with many professions, state governing bodies license or register professional engineers based on education, experience, and standardized tests. In a new professional engineer functional area, officers would earn professional accreditation with the support of the Army, much as Army doctors, nurses, and lawyers earn. Based on experience gained at the company level, graduate school, and their utilization tour, officers could apply for professional licensure from their state of choice. They would then have the opportunity to take the NCEES Principles and Practice of Engineering exam. At this stage, officers would have the knowledge, experience, and credibility necessary to advise commanders on general engineering issues.

Incorporating Professional Engineers

To provide BCT commanders with engineer advisors with a strong base of engineer knowledge and skills, a pool of ready professional engineers available in this functional area would be needed. The professional

engineer functional area would provide the personnel, but there would also be a need for positions within commands. At the BCT level, a professional engineer could be incorporated into the current staff to offer general engineering advice. At division level and above, doctrine now recognizes the senior engineer advisor as the engineer coordinator. The professional engineer could fill a newly created position subordinate to the coordinator responsible for advising in general engineering operations.

Summary

It might be argued that much of this capability already exists in the force. There is no doubt that engineer professionals currently serving have a lot of the skills and experience necessary to properly advise the commander. What the professional engineer concept provides is a full-time professional engineer on staff who is fully integrated into the headquarters. In the current complex operating environment, competent engineers are more in demand than ever before. We have seen a deficiency in our ability to advise commanders at all levels on issues involving general engineering. The best way to address this deficiency is to create a professional engineer career field. Engineers serving in this functional area would have the ability and credibility to address some of the complex general engineering issues the Army will face in the future.



Major Naranjo is a United States Army Reserve engineer officer attending Intermediate Level Education at the Command and General Staff College, Fort Leavenworth, Kansas. He has deployed twice to Iraq, serving at the tactical and operational levels. He is also a licensed professional engineer in Colorado.

WHAT IT MEANS TO BE A BATTLE BUDDY

By Specialist James V. Dunz

The following story was relayed to me about a Soldier named Eddie. It underscores the importance of Army policy in supporting your battle buddy.

One weekend many years ago when I was a young Soldier, I saw a fellow Soldier (who I soon learned was Eddie) packing all his belongings into his car. It looked as if he were leaving. I thought to myself, Why would anyone be packing up all his stuff? Since we were in the Army, it was not as though we could just go home whenever we wanted to.

As I was watching him, I saw some other Soldiers going toward him. They started picking on him and making fun of him—pushing Eddie around and knocking some things out of his hands. Then they tripped him, and he landed in the dirt. Poor Eddie looked up, and I saw a terrible sadness in his eyes. My heart went out to him. I walked quickly over to him to see if I could help.

As I pulled him to his feet, he looked at me and said, “Thanks.” A big smile transformed his face then—one of those smiles that shows real gratitude. I helped him pick up his gear and asked where he was from. I was surprised to learn that he was from my home state and asked him why I had never seen him before. He told me he hadn’t been in the Army that long. As we talked, I helped him carry his belongings to his car. Normally, I would not have hung out with a boot private like him, but as it turned out, he was a pretty good guy. In fact, the more I got to know Eddie, the more I liked him. I invited him to hang out with me and some of my friends over the weekend.

On Monday morning, I saw Eddie in the parking lot, taking everything out of his car and back to his room. I stopped him and said, “Eddie, you are going to really build some serious muscles moving all your stuff back and forth like this!” He just laughed and handed me some of it.

Over the next few years, Eddie and I became battle buddies. Even though I left the Army while Eddie continued his Service career, we remained friends. Years later, I was invited to Eddie’s retirement ceremony. On that day, Eddie was expected to say a few words. He looked great—one of those guys who really found himself in the military. I was proud of Eddie.

I could see that he was nervous about his speech. So I smacked him on the back and said, “Hey, big guy, you’ll be

okay!” He looked at me, smiled, and said, “Thanks, battle.” He cleared his throat and began: “Retirement is a time to thank those who helped you make it through all the tough years: your parents, your family, even your sergeants—but mostly your friends. I am here to tell all of you that being a battle buddy to someone is the best gift you can give him.”

Then Eddie started telling the story of how we first met. He explained that he had planned on taking his life that weekend. He talked of how he had cleaned out his room and carried his stuff to his car, so that his family wouldn’t have

“We should never underestimate the power of our actions. With one small gesture, we can change a person’s outlook.... So what does it mean to be a battle buddy to someone? It could mean saving a life.”

to do it later. I just sat there, looking at my battle buddy with disbelief. He looked hard at me and gave me a little smile. “Thankfully,” he said, “I was saved. My battle buddy, who is here today, saved me from doing the unspeakable.” I heard the gasp go through the crowd as he told us all about his weakest moment. I saw his family looking at me and smiling that same grateful smile; not until that moment did I realize its depth.

We should never underestimate the power of our actions. With one small gesture, we can change a person’s outlook...or frame of reference...or prospects. So what does it mean to be a battle buddy to someone? It could mean

Have the Courage to Help a Buddy

"One suicide is one too many."

Kenneth O. Preston
Sergeant Major of the Army

**Talk to your Chaplain or a
Behavioral Health Professional or
call Military OneSource
1-800-342-9647**

www.militaryonesource.com

USACHPPM

Photo courtesy U.S. Army Center for Health Promotion and Preventive Medicine

saving a life. So take advantage of every opportunity to make a positive impact on others. You can make a profound difference; just look around and you'll find a way. 

Specialist Dunz is a legal clerk with the 94th Engineer Battalion, having reenlisted after 20 years as a civilian. He has deployed to Iraq as an engineer in carpentry/masonry with the 77th Engineer Company. As a civilian before returning to military service, he was a minister helping the homeless for more than 15 years. His main goal is to encourage young Soldiers, and he currently is pursuing a doctrine degree in Christian counseling, to be awarded in 2011.

Note: If you need help, your battle buddy may be your nearest and most valuable source of support. In difficult moments, always be there for your buddy. You can sustain each other through stress, loss, and other trauma by showing you care. If you would like to talk to someone else, call any of the three following hotlines—available 24 hours a day to help you. Just remember, no Soldier stands alone.¹ In the Army's ACE Suicide Intervention Program, the acronym guides actions to take with a buddy to prevent suicide:

ACE (Ask your buddy, Care for your buddy, Escort your buddy).²

- Military OneSource, 1-800-342-9647. Offers 6 free counseling sessions to Service members and their families. <www.militaryonesource.com>
- National Suicide Prevention Lifeline, 1-800-273-TALK (8255). Calls are routed to the closest crisis center in your area. <www.suicidepreventionlifeline.org>
- National Hopeline Network, 1-800-SUICIDE (784-2433). Calls are connected to the nearest certified crisis center. <www.hopeline.com>

Endnotes

¹U. S. Army Center for Health Promotion and Preventive Medicine, Directorate of Health Promotion and Wellness Suicide Prevention Resources and Services, <<https://www.us.army.mil/suite/portal/index.jsp>>

²ACE Suicide Intervention Tipcard, "ACE Suicide Intervention (SI) Program," <<http://phc.amedd.army.mil/home>>

The Theater Engineer Construction Battalion:

General Engineering in Support of the Warfighter

By Lieutenant Colonel Adam S. Roth

The 844th Engineer Battalion, a United States Army Reserve unit headquartered in Knoxville, Tennessee, recently completed a mission as the theater construction battalion in Iraq. This article is germane to the Active Army and Reserve Component, since there were active duty United States Army, United States Air Force, and United States Army National Guard units within Task Force 844 during the deployment. It is hoped that some of the insights of this article will keep a few more Soldiers alive, safe, and trained, while giving the command teams of deploying battalions some peace of mind by learning from the experiences of the 844th.

Conditions

The 844th Engineer Battalion received notification of sourcing for Operation Iraqi Freedom in the spring of 2008, and the first implications of modularity set in with the information that the battalion would not be deploying with its organic subordinate units. The first concern was to establish a commander's vision and conduct a mission analysis with the leadership of the "new" 844th Engineer Battalion, now becoming Task Force 844. The unit deployed to the National Training Center, Fort Irwin, California, in the summer of 2008 as part of Operation Sand Castle to conduct construction operations in a counterinsurgency environment. During that time, the commander's vision and mission statement crystallized. The key to this exercise was the cultivation of relationships and the inculcation of the commander's vision and intent into all subordinates a full year before actual deployment. The battalion developed deployment training guidance that specified all theater-specific leader and Soldier training tasks required for premobilization and set the training azimuth for the task force.

Pre- and Postmobilization Training

The 844th Engineer Battalion and all subordinate units finally came together at the Fort McCoy, Wisconsin, mobilization station in early April 2009 and formally constituted as Task Force 844 after focusing on leader and Soldier tasks at various regional

training centers. The key to this event was to create a single identity for the newly formed unit. The second step was to conduct what was referred to as the "Patton briefing." The commander, command sergeant major, chaplain, and command chief warrant officer all conducted briefings on vision, intent, policies, and expectations. This practice would be carried far into the deployment, since the task force would continually be gaining and losing units.

The key to the success of the mobilization training plan was the partnership forged with the leaders of the 181st Infantry Brigade. It allowed the commander's vision to be fully exploited through collective training focused on construction support operations in a counterinsurgency environment. Task Force 844 was composed of both horizontal and vertical formations that required technical training for plumbers, carpenters, electricians, and horizontal military occupational specialties (MOSs). The 181st was able to conduct training with five separate mobile training teams through the United States Army Engineer School, Fort Leonard Wood, Missouri, yielding huge dividends. In collective training, the brigade's preparation of construction projects allowed the task force to construct more than 10 Southwest Asia huts, electrify a classroom, conduct numerous surveys of existing and future construction projects, and construct a combat road.

The other huge dividend that materially contributed to Task Force 844's postmobilization training was the presence of two subject matter experts from the 54th Engineer Battalion, the task force's relief-in-place/transfer-of-authority (RIP/TOA) partners, while conducting a mission readiness exercise. The benefits of their presence were immeasurable. The task force adopted this "pay-it-forward" methodology for every RIP/TOA in the future, sending company representatives on temporary duty back from theater for every incoming unit.

Lines of Effort

Once the task force hit the ground in Kuwait, leaders conducted all required theater training, taking full advantage of the mine-resistant, ambush-protected (MRAP) vehicle operator and maintainer courses,

setting conditions for eventual movement into Baghdad. Once in Baghdad, Task Force 844 conducted a standard RIP/TOA with the 54th Engineer Battalion, but now the task force had an entirely different mission. It would serve as the theater construction battalion, operating along three lines of effort (LOEs):

- Security
- Partnership
- Civil Capacity

What made this mission different from its predecessors was that the task force worked directly for the 555th Engineer Brigade at the start of the deployment (and for the 194th Engineer Brigade after midtour), performing all of the above LOEs in general support to the corps and the multinational divisions. All other engineer battalions in the theater served in a direct support role in a finite operational environment. The challenge for Task Force 844 was to operate in 14 of 18 Iraqi provinces, often simultaneously, and to effectively command and control that effort.

Security

This included all general support construction required for the theater. On 30 June, shortly after RIP/TOA, U.S.

forces were scheduled to exit from cities, villages, and locales, according to the Status-of-Forces Agreement signed in 2008. The direct impacts to the task force were that many of the joint security stations and contingency operating posts had to relocate to larger bases. Later in the deployment, infrastructure required to facilitate the responsible drawdown of forces became a separate LOE and entailed the creation of infrastructure to move the forces and equipment out of Iraq.

The second portion of this LOE was assured mobility in the form of bridging. The 401st and 250th Engineer Companies (Multirole Bridge) were responsible for both routine inspections and maintenance of all the military bridges in southern Iraq.

Partnership

This included partnering with two separate Iraqi Army engineer units—the 8th Field Engineer Regiment in Diwaniyah and the Headquarters Field Engineer Regiment at Taji. Military transition teams were established at both locations, conducting training in many disciplines, including construction project management, combat lifesaver, staff-to-staff interaction and mentoring, maintenance, and bridging. Lifelong friendships were forged in this process.



“Company commanders tailored their force packages based on skill sets, not as platoons.... This was the key to the success of the task force: small-unit leaders trusting noncommissioned officers (NCOs) and junior enlisted Soldiers to lead projects and thrive.”

Civil Capacity

This included partnering with five provincial reconstruction teams in conjunction with the 172d Infantry Brigade—and later the 3d Brigade, 3d Infantry Division—conducting numerous site surveys and completing more than 30 projects in this endeavor. What made this an interesting mission was that the combat forces applied to this effort were all active duty Air Force, further displaying the task force’s ability to work as a joint team. The task force was able to accomplish many missions, travel more than 954,000 miles, complete 226 projects, and earn a meritorious unit commendation because of its best business practices.

Best Business Practices

Task Force 844 leaders established certain principles as guideposts to gauge the success of their mission. These best business practices included—

Battle Rhythm

The staff must work for the commander and not vice versa. The battle rhythm for the seven subordinate units had to mesh so that commanders could have their Soldiers in locations as far away as Basrah and Camp Korean Village and still be able to interact. Web-based tracking and communication software ensured connectivity and responsiveness across the entire Iraq joint operating area.

Work Ethic

The maxim that “engineers are not kept in reserve” rang true for Task Force 844. The theater engineer brigade assigned numerous projects to the task force, but many projects were developed in conjunction with the operational environment owner and only later gained brigade approval. But this was not the only key to success. Company commanders tailored their force packages based on skill sets, not as platoons; thus, a platoon could be doing as many as five projects simultaneously. This was the key to the success of the task force: small-unit leaders trusting noncommissioned officers (NCOs) and junior enlisted Soldiers to lead projects and thrive.

Platoon Warrant Officers

A singular success of the construction effort was the role played by three platoon warrant officers, all utilities operation and maintenance technicians (MOS 210A). They served as mentors and leaders throughout the entire construction process. Each one had unique talents that had

major impacts on the success of the task force while also developing the next generation of technical leaders.

Metrics

Everything that a unit does can be quantified, whether it is the number of miles driven, feet of conduit installed, or number of Army physical fitness tests passed. Each metric was a gauge of success and, properly documented, made development of counseling sessions, awards, and after action reviews a simple process. When metrics are determined and constantly compiled, end-of-deployment awards and evaluations take care of themselves.

Transportation Assets

One of the practices the task force inherited from its predecessors was taking the majority of M916A1/M870A1 tractor-trailer combinations out of the horizontal companies and moving them to the forward support company (FSC). Otherwise, once a piece of equipment and an operator were delivered by the tractor-trailer to a job site, the combination would sit unused until the end of the project. With the FSC controlling that asset based on task force movement needs, those vehicles stayed in motion and ensured that the lifeblood of logistics flowed for the task force across the entire Iraq joint operating area.

Horizontal Company Maintenance Technicians

Despite having an enormous amount of rolling stock, there is no maintenance warrant officer in the modified table of organization and equipment (MTOE) for the horizontal company. When a unit maintenance technician (MOS 915A) was detached from the FSC to the 961st Engineer Company (Horizontal), the warrant officer magic began. At the time of RIP/TOA, the unit was far below an acceptable operational readiness rate. Within a mere 60 days, through the expertise of this warrant officer, the unit attained a readiness rate higher than 90 percent. This should be seriously considered as a change and documented in the future.

Junior Leader Development

As an Army Reserve unit, the amount of time available in a nondeployed status is far less than required to develop junior leaders. Unit leaders took advantage of the time while deployed to conduct regular officer and NCO development classes. Since many junior NCOs serving in squad-level leadership positions were lacking the tools to properly do their jobs, the task force command sergeant major crafted a two-day NCO development workshop,

using small-group instruction on counseling, evaluations, supervision, and leadership. In the process, the workshop developed more than 200 junior NCOs and made the task force stronger in the process.

Recognition

Acknowledgement of a job well done was a hallmark of our deployment experience. The leaders of Task Force 844 ensured that deserving Soldiers were recognized. During the deployment, the task force garnered the Itschner Award, the Sturgis Medal, the Van Autreve Award, and the Steel deFleury Medal. The task force also administered an active Bronze deFleury Medal program. Even more noteworthy is that one logistician received the United States Army Quartermaster Corps Order of St. Martin, and two maintainers received the United States Army Ordnance Corps Order of Samuel Sharpe. The task force additionally had an element that competed for the Army Award for Maintenance Excellence at the Department of the Army level.

Information Operations

The message is just as important as the mission. Task Force 844 executed an aggressive information operations

campaign throughout the entire deployment process. Elements of the task force were on Armed Forces Network and the Pentagon Channel frequently and conducted a weekly radio talk show highlighting the Soldiers of Task Force 844 and their service on our Knoxville-based radio station, WIVK-FM. The public affairs officer, a sergeant, excelled at her job.

Summary

The author hopes that some of the information in this article gives pause to future command teams as they prepare to deploy as part of the best-trained, best-equipped, and best-led Army that our nation can provide.



Lieutenant Colonel Roth was the commander of the 844th Engineer Battalion at the time this article was submitted. He is now attending the Army War College at Carlisle Barracks, Pennsylvania. He has served in numerous staff assignments, including a tour as the executive officer of the 458th Engineer Battalion, and has commanded a combat heavy engineer company. He is a graduate of the Command and General Staff College and holds a master's in mechanical engineering from Boston University.

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.

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JTF NORTH ENGINEER DIVISION

Building Leaders and Refining Skills Along the Southwest Border

By Major Christian L. Neels

For more than 20 years, the Joint Task Force (JTF) North Engineer Division has assisted volunteer engineer units with lighting and fence-building operations and construction of roads and bridges along the border between Mexico and the United States in Texas, New Mexico, Arizona, and California. The units, typically platoon-size elements, conduct 30- to 45-day missions in austere environments, similar to those found in the United States Army Central Command's area of responsibility, to increase the United States Border Patrol's ability to interdict transnational threats such as international terrorism, narcotics trafficking, illegal alien smuggling, and other activities that threaten homeland security.

The opportunities JTF North missions provide to develop leadership skills and military occupational specialty (MOS) proficiency are rarely available at home station due to training area restrictions, lack of resources, and a variety of training distractions. During a JTF North engineer support mission, a deployed unit will execute a real-world engineer operation in an environment where distractions are minimal, the terrain is often complex, standing rules on the use of force are strictly observed, and mission funds are readily available. (JTF North funds most mission-related requirements, and the supported agencies pay for all material costs.) Although training away from the flagpole can be difficult, the JTF North missions present units with

challenges they may face during future deployments on overseas contingency operations.

JTF North Mission Phases

Missions are normally conducted in four phases: predeployment, deployment, employment, and redeployment. All phases provide outstanding opportunities to build small-unit leadership and hone Soldiers' MOS-related skills, to include—

- Construction planning and supervision.
- Logistics and resource coordination.
- Risk management and environmental plan development.
- Budget maintenance.
- Command and control.
- Reporting and briefing.
- Personal issue resolution.
- Troop-leading procedures.
- Operations security practices.
- Daily Border Patrol intelligence updates.
- Construction equipment operation and maintenance.
- Drafting and surveying.

To ensure that the unit has adequate preparation time to execute a JTF North mission, initial coordination with the unit usually begins a year before the proposed execution date. The JTF North staff assists the unit throughout the four phases to ensure mission success.

Predeployment

Following an initial planning conference outlining unit requirements and available support, unit leaders conduct an initial visit to the construction site. During this visit, a JTF North engineer mission planner (an engineer officer from one of the four branches of the military), the Border Patrol project managers, and United States Army Corps of Engineers (USACE) representatives walk the ground with the unit leaders, highlighting the scope of work with the plans that will be used for the mission. After the construction site reconnaissance, the group conducts an overview of the local area and available life support and answers questions before the unit leaders return to home station for continued planning. Throughout the planning process, unit leaders gain valuable experience in—

- Developing training plans to prepare Soldiers for the mission.
- Determining task organization and equipment requirements.
- Coordinating to obtain needed resources.
- Working within an established budget.

Leaders also gain proficiency in reading construction plans and work with JTF North, the Border Patrol, and USACE to agree on a tailored scope of work that the unit can achieve during its deployment. Throughout the planning and execution of the mission, the JTF North staff is available to provide assistance and recommendations. At the end of the predeployment phase, a mission confirmation briefing is conducted for JTF North leaders. In preparation for this briefing, orders and presentation skills are honed at home station and with the JTF North mission planner.

Deployment

During the deployment phase, the unit begins reporting to JTF North, and advance echelon personnel arrive to draw equipment and conduct final coordination for a bill of materials (BOM) and life support and prepare to receive the main body. Although JTF North mission and logistics planners are available to assist, unit leaders are expected to take the lead. The unit must inventory and sign for equipment, conduct a joint inspection of rented equipment with vendors, and finalize the delivery schedule of the project BOM. Additionally, final coordination with the Border Patrol and USACE is conducted. Maintaining accountability of unit personnel throughout the deployment process tests the unit's personnel management and tracking systems and reporting procedures.

Employment

Following mission startup briefings from the JTF North staff and the Border Patrol, the unit conducts site



A Seabee observes the Armorflex installed for a low-water crossing along the United States–Mexico border. Reserve Component units use the JTF North engineer support missions to accomplish their annual two-week training requirement. Reserve Component units can rotate their personnel throughout the mission.



Navy Seabees construct an improved road east of Nogales, Arizona. To accomplish its engineer support missions along the Southwest border, JTF North employs engineers from all the military services.

familiarization, rehearses medical evacuations, and begins construction on the project. In addition to the leadership required to execute the plan and enforce safety, discipline, and quality control, the unit works with multiple outside agencies. Leaders maintain constant contact with the Border Patrol for security and intelligence updates, with USACE or their designated representative for project inspections, and with civilian contractors delivering BOM and providing equipment maintenance.

Soldiers gain critical experience in their MOSs in complex terrain, which is often different from the terrain at home station. Soldiers on road construction projects have the opportunity to hone their skills operating water trucks, bucket loaders, bulldozers, excavators, graders, and a variety of other heavy equipment required for their specified scope of work. Personnel conducting lighting missions have wire pulls and excavators and may work beside civilian electricians when required. Although basic operator preventive maintenance is required on the rented equipment, mechanics from the rental company are often provided, reducing unit maintenance requirements.

In addition to construction equipment, JTF North works with the Border Patrol and USACE to use materials that are unavailable at home station but that the unit may need in future operations. Due to the complex terrain, low-water crossings often have to be emplaced. Rather than forming and pouring a concrete low-water crossing, JTF North and USACE prefer Armorflex® matting. These preformed, flexible 8-foot-by-20-foot concrete block mats can be used for roadways or erosion control, reducing the time of emplacement, and giving units experience emplacing the material. At the completion of the mission, units conduct a joint after

action review with JTF North personnel, the supported Border Patrol station, and USACE. Lessons learned are captured for follow-on units and help tailor the unit's training on return to home station.

Redeployment

Following mission completion, the unit's main body redeployes while the rear party closes out contracts for equipment and billeting and returns equipment drawn from JTF North. Lessons learned throughout the deployment process can then be applied by the unit to improve redeployment operations. Within 30 days of mission completion, the unit is required to provide a written after action review outlining issues encountered and providing recommendations.

Conclusion

JTf North missions provide junior engineer leaders an ideal environment to increase their planning and leadership skills while increasing their Soldiers' MOS competencies. The opportunities to work with outside agencies and to practice the coordination needed to successfully complete JTF North missions are seldom found in the continental United States. The JTF North engineer support missions have proven invaluable to units preparing for future operations.

Units interested in volunteering to execute a homeland security engineer support mission can contact the JTF North Engineer Division at commercial (915) 313-7609 or DSN 666-7609.



Major Neels is an engineer mission planner for JTF North. Previous assignments include platoon leader and company executive officer with the 2d Engineer Battalion, 2d Infantry Division, Republic of Korea; task force engineer, battalion operations officer, and company commander with 3d Battalion, 7th Infantry Regiment, Fort Stewart, Georgia; and brigade engineer for the 4th Brigade Combat Team, 3d Infantry Division, Fort Stewart. He holds a bachelor's in English from Coe College, Cedar Rapids, Iowa, and is a graduate of the Engineer Officer Basic Course, Infantry Captains Career Course, and Pathfinder and Airborne Schools.

Note: The photos used in this article are of a JTF North engineer road support mission executed in Nogales, Arizona, in October and November 2009, by a detachment from Naval Mobile Construction Battalion Two Six, based at Mount Clemens, Michigan.

USACE Takes Going Green to New Heights

By Dr. JoAnne Castagna

It's been called the new centerpiece of the city of Alexandria, Virginia. It is the new multistory Department of Defense (DOD) administrative office complex. The facility is not only the tallest structure in the region but also the tallest building ever erected by the United States Army Corps of Engineers (USACE).

LEED Certification

What isn't as obvious as the size of the building is something that may be more impressive. This is the first project of this size where the Corps

is working for Leadership in Energy and Environmental Design (LEED) Gold building certification and the only one in the region that will save 30 percent of the energy of a traditional complex—and save taxpayers millions.

LEED is an internationally recognized green building certification system that was developed by the United States Green Building Council. There are different levels of certification, based on the number of points earned; LEED Gold is one of the top certifications, earning 60–79 points. Other certifications are Certified (40–49 points); Silver—the minimum level to be achieved for federal buildings



Photo by Marc Barnes, U.S. Army Corps of Engineers

Precast exterior wall panels are quickly rising to the top of 17-story and 15-story office towers as construction continues on the Department of Defense office complex at the Mark Center in Alexandria, Virginia.



A contractor applies materials to seal the exterior wall of the south parking garage at the Department of Defense office complex (BRAC 133) project site.

(50–59 points); and Platinum (80–100 points). The rating system is centered around prerequisites, credits, and points per credit—with credits based on possible environmental impacts and human benefits.

In March 2009, the USACE New York District began constructing the design-build complex located at the Mark Center in Alexandria, in partnership with Duke Realty Corporation and Clark Construction. The complex will be home to multiple DOD agencies that are currently occupying leased space throughout the National Capital Region and will also include the Washington Headquarters Services, the base realignment and closure (BRAC) executive agent for these DOD customers. The project—which when completed in September 2011 will become a part of Fort Belvoir, Virginia—implements the 2005 BRAC Commission Recommendation Number 133.

The new 1.7-million-square-foot facility sits on a 16-acre campus and, when construction is completed, will consist of two towers (15-story and 17-story), two parking garages, a visitor center, remote inspection facility, and a public transportation center that will service the Mark Center and surrounding community. The city of Alexandria and other team members stressed the importance of making this complex certified LEED Gold, and USACE made this its mission.

According to the chief of the BRAC 133 Project, the goal was to have two certifications for the complex—LEED Silver and LEED Gold. After a review of the original design plans showed that only one point separated the project from being certified LEED Gold overall, the chief decided to

shoot for LEED Gold for the entire complex. To obtain that level, USACE is designing and constructing the complex using cutting-edge strategies to earn LEED credits.

Energy-Saving Features

The following features are estimated to save 30 percent on energy needed for the LEED complex:

Indoor Lighting

The team is taking measures to ensure that all of the DOD personnel will have adequate, yet energy-saving, lighting. The entire complex will have light-emitting diode (LED) and fluorescent lighting that will cost a

little more to purchase up front, but will reap tremendous savings down the road. This type of lighting requires less electricity to run, and LED and fluorescent light bulbs last longer than typical bulbs—up to eight years! Lighting use will be conserved with the help of room occupancy sensors that will automatically turn lights on and off, depending on whether a room is being occupied.

Natural lighting will also be used to the fullest. The complex is being constructed with large, shatterproof windows that will allow an abundance of outside light into the building. To help distribute this light, work stations in the complex will be built with low cubicle partitions to make sure there is adequate light spreading throughout the building.

Indoor Air Quality

Low cubicle partitions will facilitate air circulation, thereby improving air quality, which is also a goal of the team. The complex will have an energy-efficient central air system that will keep indoor air comfortable year-round for the personnel. To conserve this air, large windows in the complex will be highly insulated to prevent air from leaking outside the building. Since fresh outside air is necessary for healthful indoor air quality, a system will be put in place for personnel to allow outdoor air into the building without wasting considerable energy.

The team is constructing “green roofs” on the Visitors’ Center and Remote Inspection Facility in the complex. These rooftops with vegetation on them are not only esthetically pleasing but also hold in warm indoor air during winter and keep building interiors cool during the warmer months. Another way the team is keeping indoor air



Photo by Marc Barnes, U.S. Army Corps of Engineers

The USACE New York District is managing design and construction of the \$1.08 billion facility as part of BRAC 2005.

comfortable on some structures is by installing special rooftops that will reflect sunlight away from the buildings, keeping indoor air cool during the warmer months.

Indoor air toxins are also a threat to air quality, and the team is taking measures to minimize this issue. One way is by using paints, carpets, and wooden furniture that emit lower levels of toxic fumes. After the structures are painted and carpeted and contain their furniture, the team will air out the structures before DOD personnel occupy the space. In addition, DOD has agreed to use low-toxin cleaning products inside the building after the occupants move in.

Water Efficiency

The complex will use nearly 50 percent less water than a traditional building of the same size—a savings of 4.5 million gallons of drinking water annually. To accomplish this, low-flow faucets, urinals, and showerheads will be used inside the complex. Outside the complex, there will be no landscape irrigation; only drought-tolerant native plants will be planted. The team is also constructing a bioswale—a ditch that catches rainwater and slows the water runoff from the site, capturing sediment and contaminants before they go into the storm drains—outside most of the main structures.

Recycling

When the project is completed, it is estimated that 6 million pounds—or 75 percent—of construction waste will be recycled and not placed in disposal sites. The team is also

recycling some of the trees that they had to remove to construct the complex, taking the wood to create wall paneling for some of the complex's interior. Recycling will continue once residents are in the building; they will be provided a 500-square-foot recycling area in their loading dock with recycling bins that will also be stationed on each floor of the towers.

Transportation

The DOD agencies occupying the complex will encourage their employees to take alternate ways in commuting that will save energy and reduce pollution. The agencies are doing this by providing special parking for van pools, carpools, and fuel-efficient hybrid vehicles in the complex's two parking garages and by supplying 300 bicycle racks and showers for bicyclists. The complex will also have its own mass transit center with access to the Metro Bus, Dash Bus, and DOD shuttle services.

Summary

The BRAC 133 Project is an incredible mission for the New York District. As the standards for green building are slowly being worked out, they are going to get better, and USACE is helping to lead the way in moving them forward.



Dr. JoAnne Castagna is a technical writer-editor for the United States Army Corps of Engineers, New York District, and can be reached at <joanne.castagna@usace.army.mil>.

FROM COMPLIANCE TO SUSTAINABILITY: ARMY RESERVE CONSTRUCTION PROJECT MOVING OFF THE ELECTRICAL GRID

By Lieutenant Colonel Bradley A. Duffey

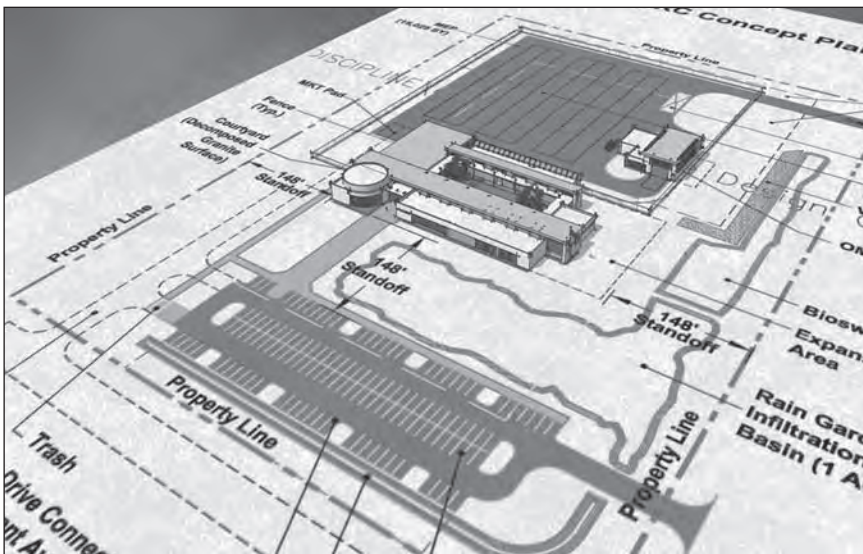
Reducing fossil fuel consumption and conserving air, land, and water resources while trying to strengthen operational capacity and meeting current and future requirements may appear to be a daunting task, but the United States Army's Office of the Assistant Chief of Staff of Installation Management–Army Reserve Division is successfully doing both.

The project is the United States Army Reserve Center in Las Cruces, New Mexico, and the goal is to get the facility off the grid—or self-sustaining in all its energy needs—by 2012. The center will include a 32,000-square-foot training building, a 4,841-square-foot vehicle maintenance shop, a 1,065-square-foot unheated storage building, and a 15,760-square-foot organization parking lot. The project will be the Army's pilot program for Leadership in Energy and Environmental Design (LEED) Platinum. The extra costs of building to LEED Platinum standards will be paid for with energy savings.

LEED is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. The Assistant Secretary of the Army for Installations and Environment laid out in a 2005 policy memorandum the Army strategy for integrating the principles and practices of sustainability on Army installations. That memorandum mandated that all military building construction, beginning in fiscal year 2008, would achieve at least the LEED Silver rating.

LEED was created to define “green building” by establishing a common standard of measurement, promoting integrated design practices, and transforming the building market. LEED provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific standards, LEED emphasizes state-of-the-art strategies for sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. The United States Green

Building Council (USGBC) has outlined criteria that engineers can follow to gain LEED points. Using innovative wastewater technologies, redeveloping brownfields, building on sites easily accessible to public transportation, and reusing materials are just a few of the criteria. Under the system in place at the time, LEED Silver rating, the minimum for military construction projects, required between 33–38 points. LEED Gold took between 39–51 points, and LEED Platinum was between 52–69 points. A building with a LEED Silver rating consumes 30 percent less energy than a standard design. Depending on the steps taken to achieve the LEED Silver rating, the extra construction costs can be an added 5 to 30 percent.



Artist rendering of Las Cruces facility

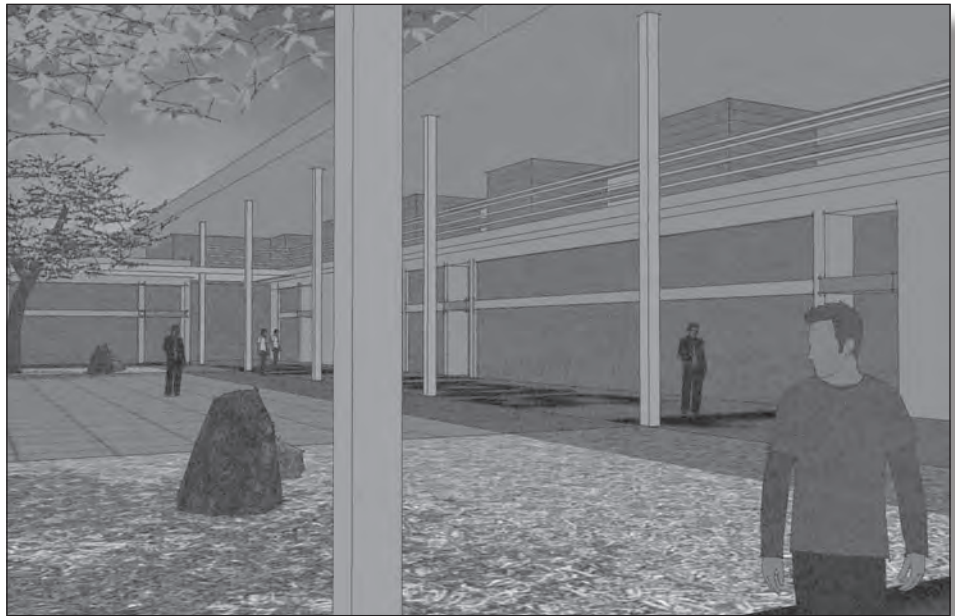
There is more to this project than the typical solar panel placement, solar-lighted parking lot, trees for shade, or waterless urinals. A unique feature of the project is the use of rammed earth materials such as clay and sand compressed into formwork. Rammed earth construction uses noncombustible materials that are thermally massive and extremely durable. The thermally massive rammed earth walls in the Las Cruces project will absorb heat during the day and slowly leach the heat throughout the buildings, significantly reducing interior temperature swings. The thermal mass concept is also referred to as “passive design.” Passive systems are simple, have few moving parts, need minimal maintenance, and require no mechanical systems. The project also uses *bioswales*, which are landscape elements designed to remove silt and pollution from surface runoff water. These bioswales, an alternative to storm sewers, are enhanced with an abundance of deep-rooted native plants. The cost in using bioswales is less than underground piping, and additional cost savings come from not having to use turf, which requires more water and maintenance. Incorporating bioswales as part of this project increased the USGBC points to achieve Platinum status.

The design of the training building has a courtyard in the middle of the structure. The courtyard is not just a trendy feature, but creates a stack effect as air naturally moves throughout the courtyard. The dimensions of the courtyard, coupled with the inside and outside air temperatures, create the airflow rate. The type of window in the building gives occupants additional control over the airflow into their offices. This courtyard design, using natural airflows, creates an airflow rate similar to a household fan and uses no electricity, as opposed to a typical household fan that uses an average of 200 watts of electricity.

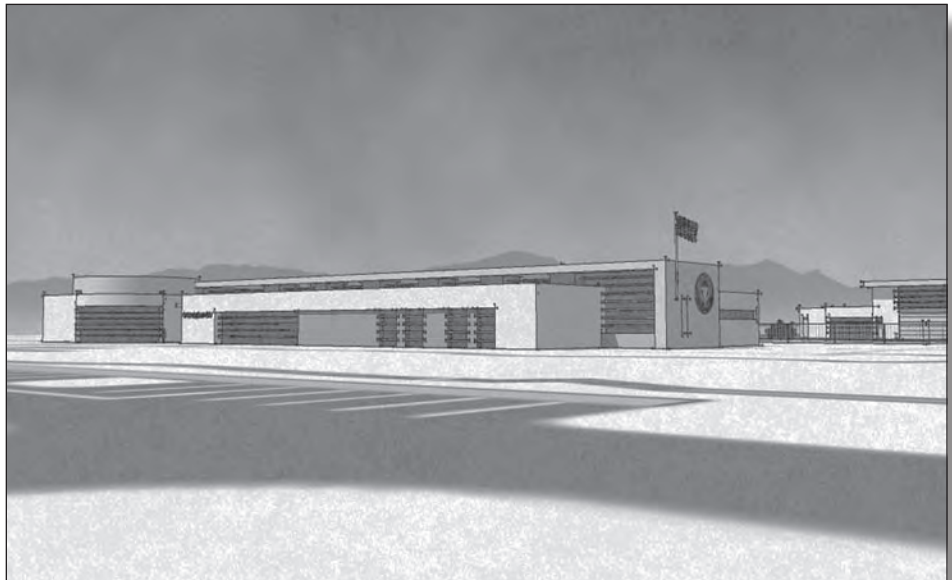
The Office of the Assistant Chief Of Staff of Installation Management has quickly accelerated the goal of getting off the grid by 2030 with this Las Cruces project. More important, the Army Reserve is using this technology and innovation to anticipate future challenges to reduce

consumption of natural resources while at the same time meeting current and future mission requirements. 

Lieutenant Colonel Duffey, a student at the National War College, Fort McNair, Washington, D.C., was a project officer for the Office of the Chief of Staff for Installation Management when this article was submitted. His past assignments include police mentor team chief, Bala Baluk, Afghanistan; operations officer, Afghan Regional Security Integration Command–West; and reserve liaison construction officer for the Joint Multinational Training Command, Grafenwoehr, Germany. He holds a bachelor's from the University of Central Oklahoma in Edmond, Oklahoma, and a master's from Central Michigan University in Mount Pleasant, Michigan.



Artist rendering of central courtyard



Artist rendering of southeast view of facility





Photos by Visual Information Center



May-August 2010

Army Sustainability and Leadership in Energy and Environmental Design

By Mrs. Rebecca C. Wingfield

Sustainability is one of the newest Army buzzwords. You may ask then, “What is sustainability?” The word *sustain* is of Latin origin, and sustainability is the capacity to uphold, maintain, or endure.¹ However, in the last several years the term has taken on a life of its own, and its meaning has changed from simple to highly complex. In the figure below, concentric circles represent the “Three Pillars of Sustainability” and their interconnections.² If you were to ask most people what sustainability is about, you might get answers concerning the state of the stock market, the housing market, agriculture, marriage and the family, or the earth’s ecosystems and how human activities are destroying our planet—all of which describe the capacity of certain aspects of our culture or society to endure. Although none of these answers are wrong, they don’t quite get to the Army perspective.

Three Pillars of Sustainability



Sustainable Practices

Armey Sustainability, as defined in the 2010 Army Posture Statement, is—

“ . . . a program to accelerate transition from the Army’s traditional, compliance-based approach in environmental stewardship to a mission-oriented, systems-based approach. Army Sustainability objectives are to meet current and future mission requirements worldwide, safeguard human health, improve quality of life, and enhance the natural environment. Sustainable practices improve our ability to organize, equip, train, and deploy our Soldiers as part of the joint force today and into the future. In the context of the new Army Sustainability Campaign Plan, sustainability involves—

- *Developing, producing, fielding, and sustaining materiel that is more energy efficient, capable of using renewable energy resources, reduces the use of hazardous materials, and generates less waste.*
- *Ensuring that the Army has sufficient access to training and testing resources, by incorporating sustainability into operational planning and execution so that the Army can continue to effectively train today and in perpetuity.*
- *Instilling sustainable practices in all levels of our Soldier and civilian education programs.*
- *Providing services and operating facilities in a manner that reduces consumption of resources, promotes the use of renewable energy sources, enhances quality of life, and continues to protect the environment.”³*



Apartment-style living with parking, dumpster, and gazebo

Sustainable Design and Development

This article focuses primarily on the fourth bullet of the Army Posture Statement on Army Sustainability. In 2001, the U.S. government determined that any new government facility would be environmentally friendly and sustainable. The Sustainable Project Rating Tool (SPiRiT) was created and used to design and rate projects for sustainable design and development (SDD) by the United States Army Corps of Engineers (USACE). The Office of the Assistant Secretary of the Army (Installations and Housing) announced in January 2006 that the Army would transition from its SPiRiT rating system to Leadership in Energy and Environmental Design (LEED) for all new construction projects, regardless of funding source:

“LEED buildings demonstrate better life cycle economic performance than conventional construction, use less energy and water, and have a smaller environmental footprint. According to the U.S. Green Building Council (USGBC), the Federal Government, the nation’s largest building owner, has been among the top users of the U.S. Green Building Council’s LEED rating system, and has also helped to develop and improve the rating system through participation in USGBC member committees.”⁴

The United States Army, as a proponent for LEED in this country, is a member of the USGBC, which promotes use of the LEED rating system and “green” building practices through its LEED certification program. LEED has become the industry standard for SDD and is used to certify buildings and structures as environmentally friendly systems.

The Energy Policy Act of 2005 and, most recently, the Energy Independence Security Act of 2007 (EISA 2007) require that SDD practices be used not only to introduce energy efficiency into systems and structures but also to require energy-use reductions.⁵ Since 2007, all U.S.

government structures built in the continental United States require third-party certification of performance energy standards for new government buildings—a requirement of the EISA 2007. In its Section 433, performance energy efficiency standards specified by the Department of Energy state that *“the buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by the percentage specified in the following table:*

Percentage Reduction	By Year
55	2010
65	2015
80	2020
90	2025
100	2030

Section 433 also requires that sustainable design principles be applied to the siting, design, and construction of buildings subject to the standards.”⁶

According to EISA 2007, Section 433, a *“certification system and level for green buildings shall be identified by DOE [Department of Energy] in consultation with the Department of Defense (DOD) and GSA [Government Services Administration] based on Director of Federal High-Performance Green Buildings ([part of] GSA) findings.”⁷*

USGBC is the third-party certification agent, and LEED is the certification rating system used.

LEED Rating System

LEED provides a complete framework for assessing building performance and meeting sustainability goals. The minimum certification level to be achieved for federal buildings is LEED Silver—the second of four ratings: Certified (40–49 points), Silver (50–59 points), Gold (60–79 points), and Platinum (80–100 points). Projects must achieve all the prerequisites and a minimum of 50 percent of the available points to be awarded LEED Silver certification. The allocation of points between credits is based on the potential environmental impacts and human benefits of each credit. The impacts and benefits are defined as the environmental or human effect of the design; construction; and operation and maintenance of the building (which include greenhouse gas emissions, fossil fuel use, toxins and carcinogens, air and water pollutants, and indoor environmental conditions). To earn LEED certification, the applicant project must meet requirements for all the prerequisites and credits worth the minimum number of points to earn the desired project rating. The LEED rating system is based on well-founded scientific standards, emphasizing state-of-the-art strategies for the following credit categories—which show the number of prerequisites, the number of credits, and the number of points possible to be earned per credit. Project points to be compiled are 100 base points and 10 bonus points, for a grand total of 110 points in these categories:

Sustainable Sites prerequisites (2) and credits (10) section focuses on environmental concerns related to the project landscape, the project hardscape (paved areas), and

the exterior of the building—specifically, protection of open habitat; snow and ice removal; paints and sealants used on the building exterior surfaces; alternate methods of transportation (to reduce the need for automobile parking); and green roofs. (26 points possible)

Water Efficiency prerequisites (1) and credits (4) section focuses on environmental concerns related to the use and disposal of water in the project—for example, water-efficient landscaping; reduced-flow plumbing fixtures; and cooling tower water management. (6–10 points possible)

Energy and Atmosphere prerequisites (3) and credits (6) section focuses on building energy performance, as shown by modeling; managing refrigerants to eliminate CFCs; and using renewable energy. (11–35 points possible)

Materials and Resources prerequisites (1) and credits (6) section focuses on environmental impact of materials brought into the project (materials selection) and the minimization of landfill and incinerator disposal for materials that leave the project (waste reduction and disposal). (8–14 points possible)

Indoor Environmental Quality prerequisites (3) and credits (10) section focuses on occupants' health, safety, and comfort; energy consumption; air change effectiveness; and air contaminant management. (15 points possible)

Innovation in Design credits section focuses on use of new technologies and up-to-date research to introduce cutting-edge techniques into the green building industry. (6 points possible)

Regional Priorities credits section focuses on solutions unique to the region's environmental concerns. (4 points possible)⁸



Kitchen, showing tile floors, solid countertops, stackable high-efficiency washer and dryer, microwave oven, refrigerator, and dining counter for Soldiers

All members of DOD should support LEED certification use and advocate for it at their installations and facilities. LEED, by its very nature, supports Army sustainability goals, as shown in Executive Order (EO) 13514, issued in October 2009:

“Section 1. Policy. In order to create a clean energy economy that will increase our Nation’s prosperity, promote energy security, protect the interests of taxpayers, and safeguard the health of our environment, the Federal Government must lead by example. It is therefore the policy of the United States that Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies and environmentally preferable materials, products, and services; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; strengthen the vitality and livability of the communities in which Federal facilities are located; and inform Federal employees about and involve them in the achievement of these goals.” (Emphasis added.)

This EO has set as policy **sustainability** in our building infrastructure. All of the above emphasized statements were implemented in *LEED 2009 for New Construction and Major Renovations*, the reference guidebook for the updated LEED rating system. Constructing more sustainable Army infrastructure allows for availability of more resources in support of the mission, Soldiers, and their families.

Another beneficial attribute of LEED buildings is that, in many cases, they are more comfortable to work and live in. LEED buildings often feature natural lighting, increased ventilation, and low volatile organic compounds (VOCs) in construction materials—all contributing to more comfort for inhabitants and producing less illness due to indoor air pollution. VOCs are the toxic compounds often found in many paints, glues, and solvents commonly used in building construction products and some industrial cleaners. In general, when people work in a sustainable building, greater productivity is the result, which leads to cost savings.

Sustainable Army Infrastructure

An excellent example of a LEED project at Fort Leonard Wood, Missouri, is the Permanent Party Barracks project, constructed by S. M. Wilson for USACE and completed in April 2010. The project was phase 3 of a 5-phase plan for permanent-party, single-Soldiers’ barracks. This phase 3 project is expected to receive LEED Gold certification and was turned over to the Army ahead



Recharging outlets for electric cars, preferred parking place, and stairs to entrance of 2d floor quarters

of schedule to allow redeploying Soldiers to move directly into these new quarters.

The buildings feature five apartment-style units per building. Each barracks unit has space for two Soldiers, except for the senior noncommissioned officer’s (NCO’s) quarters that are set up for the individual NCO. The second bedroom area in the NCO’s quarters is furnished as a living room. The remaining four barracks units have two private bedrooms, each with a closet and a vanity. The Soldiers share a bathroom, the kitchen, and laundry. Kitchens include solid countertops; microwave ovens; full-size Energy Star-rated refrigerators; and a stacked, high-efficiency washer and dryer. There is one parking place per bedroom, which allows Soldiers to keep their vehicles clean, secure, and close to their quarters. This project also implemented preferred parking for two energy-efficient vehicles, with a power outlet for electric charges. The project features multiple basketball courts, volleyball courts, horseshoe pits, and a walking trail for physical fitness.

Excellent facilities like these can help increase retention rates and provide a higher quality of life for Soldiers, while increasing sustainability of our forces—which is one of the goals of the Army Posture Statement. Higher retention rates mean that fewer resources will have to be expended to keep the Army at a high rate of readiness in trained personnel. Showing Soldiers that they are valued members of the Army—a resource that the Army cannot do without—by providing them with high-quality, comfortable living quarters should mean that the Army will not have to work as hard to retain its forces.

Reducing the Footprint

Other sustainable strategies that DOD and the Army have implemented are policies such as buying green products for cleaning and promoting telework or telecommuting for those people whose jobs qualify



Horseshoe pits, volleyball courts, and basketball courts

for the plan. The telework strategy provides for approximately 20 percent of the workforce to use alternative work sites (for example, the home) at any one point in time.¹⁰ This is an innovative way to diminish the infrastructure footprint of DOD, which can reduce—

- Energy costs in buildings, if they can be smaller.
- Number of employees commuting.
- Automobile emissions.
- Air pollution.
- Automobile accidents during inclement weather.

Not all agencies have employees who can telework, but agencies that do can provide a significant cost savings.¹¹

The four goals of Army sustainability cover the functions of the Army and require members of the Army team to provide and improve innovative ways to increase the sustainability of the Army. If we stay open-minded to innovation, we can solve many of our sustainability goals. 

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Endnotes

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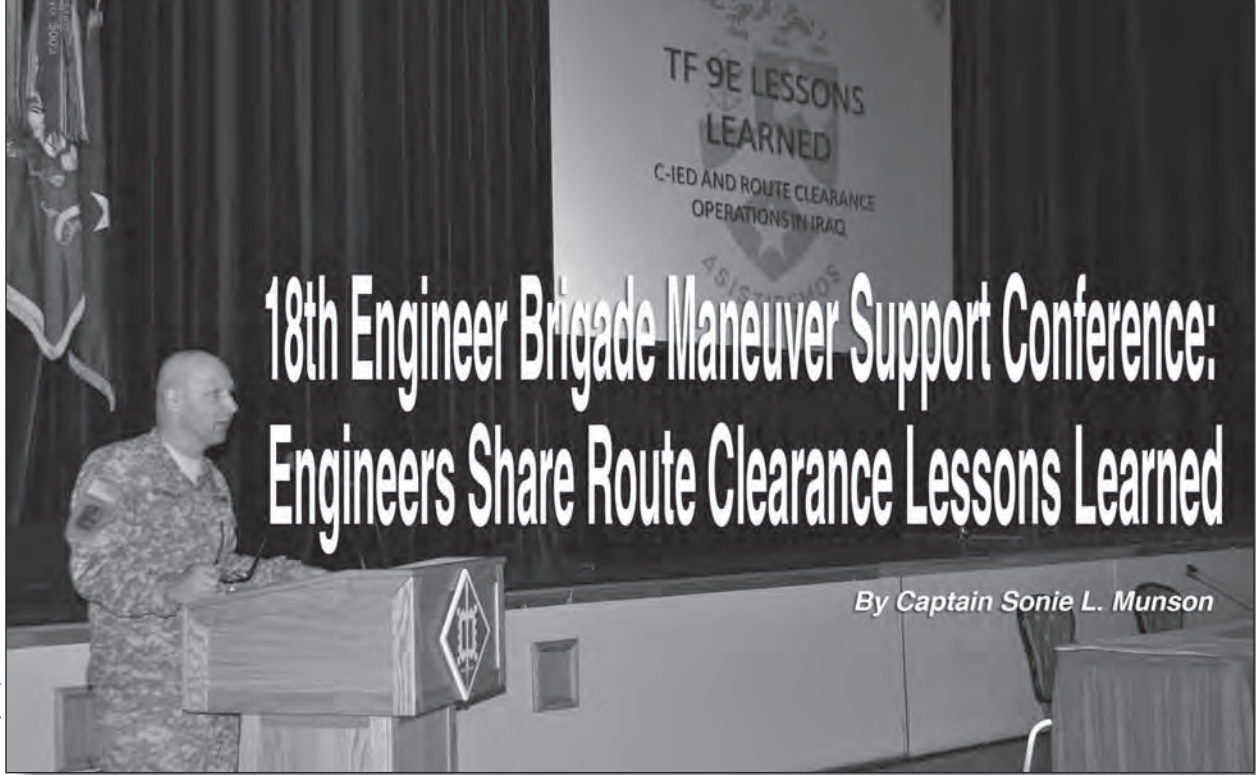
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18th Engineer Brigade Maneuver Support Conference: Engineers Share Route Clearance Lessons Learned

By Captain Sonie L. Munson

Soldiers from across United States Army, Europe (USAREUR), and individuals from the Engineer Regiment came together for a maneuver support conference sponsored by the 18th Engineer Brigade at Heidelberg, Germany, in March. During the three-day conference, units throughout USAREUR shared lessons learned about route clearance operations during their recent deployments to Iraq and Afghanistan. The brigade commander, who began the conference with hopes that the information shared would go back to the units, said that knowledge is only useful when it is put to use.

Representatives from the 4th, 9th, and 54th Engineer Battalions spoke about the lessons they learned during recent deployments and held two panel discussions in which members of the Engineer Regiment asked questions to help them understand route clearance and how to operate at the battalion, company, and platoon levels.

The operations officer for the 9th Engineer Battalion, whose unit operated in five provinces south of Baghdad, Iraq, emphasized the importance of the top five lessons learned.

Centralized route clearance. This was essential to success because it allowed the battalion to plan all route clearance operations within the five provinces, letting the unit prioritize routes based on the threat in the area. The unit cleared an average of 4,000 kilometers a month, but when the threat from improvised explosive devices (IEDs) increased, the number of kilometers cleared doubled to ensure that the roads were safe for the local populace.

Effects-based operations. The 9th Engineer Battalion planned operations with certain outcomes in mind and achieved them in ways that weren't always obvious. For example, one desired outcome was to discover and eliminate IEDs. U.S. forces subjected IED sites to crime scene investigation, and sometimes that resulted in finding an

IED emplacement or network. This practice convinced the Iraqi Army and Iraqi Police to establish their own crime scene investigation labs.

Robust engineer equipment fleet. This allowed U.S. engineers to complete any engineering mission assigned, whether route clearance or general engineering. A large fleet rendered the unit less vulnerable to shortages or delays in orders for low-density items or those that weren't in the military ordering system.

Training as multifunctional engineers. Training in military occupational specialties other than their own resulted in better-trained Soldiers and helped break up the monotony of long duty hours. The change of pace gave general engineering Soldiers time away from construction sites and helped keep Soldiers alert during their route clearance missions.

Crew rest management. Many Soldiers needed to perform maintenance during rest periods and needed more time to wind down before they were able to fall asleep. This resulted in overall lack of sleep and mission ineffectiveness. To counter this problem, leaders ensured that Soldiers were getting enough sleep by checking rooms during lights-out, thus managing crew rest periods.

Route clearance is one of the Engineer Regiment's most important missions in the wars in Iraq and Afghanistan. By keeping open lines of communication and sharing lessons learned, USAREUR leaders hope to improve engineer performance and save Soldiers' lives. 

Captain Munson was the public affairs officer for the 18th Engineer Brigade when this article was written. She took command of Headquarters and Headquarters Company, 15th Engineer Battalion, Schweinfurt, Germany, in July.



Army Delivers Route Clearance Vehicle Capabilities

By Lieutenant Colonel Charles P. Dease

While clearing routes in the war zone, Soldiers keep their eyes and ears open for any visible threats. The environment is difficult and inhospitable. The driver accelerates the vehicle, then. . . an explosion! A powerful blast wave ripples through the vehicle, creating deafening noise and smoke. Any contents of the vehicle not secured become airborne; the occupants are stunned and disoriented. Finally, stillness and awareness return. Moments later, Soldiers rise from the remnants of their vehicle. Each passenger is accounted for and checked for injuries. More often than not, the injuries are not severe, and the trailing convoy can move forward. It is another victory against the enemy.

The scene described above is not always the result when a route clearance vehicle (RCV) encounters an improvised explosive device (IED). However, such fortuitous outcomes are becoming more common, due to the evolution of RCVs that can detect, identify, neutralize, or defeat explosive hazards, enabling warfighting commanders to operate with minimal interruption. The Army's Product Manager, Assured Mobility Systems (PM AMS) leads the development, procurement, fielding, sustainment, and upgrade of the Army's young fleet of RCVs.

Development and Fielding

In 2005, the Program Executive Office for Combat Support and Combat Service Support (PEO CS&CSS), which is located at the U.S. Army TACOM Life Cycle

Management Command (TACOM LCMC) in Warren, Michigan, created PM AMS with a charter to manage the product life cycle of the swiftly emerging route clearance fleet of vehicles. PM AMS reports to the Army's Project Manager (PM), Mine-Resistant Ambush-Protected (MRAP) Vehicles, falling under the leadership of the PEO CS&CSS.

PM AMS approached its mission with a sense of urgency—route clearance capabilities were needed in-theater to save Warfighters' lives. Today, the development and fielding of route clearance capabilities continue to remain important. According to the Defense Manpower Data Center, IEDs are responsible for nearly two-thirds of all casualties caused by hostile action in Afghanistan and Iraq.

The objective of PM AMS is to provide effective, reliable, and affordable vehicle platforms capable of detecting,

identifying, neutralizing, and defeating suspected explosive hazards. Most MRAP vehicles are general transportation assets designed to protect their occupants while trying to avoid hazards. PM AMS works on the engineering development, procurement, fielding, and sustainment of RCVs specifically designed to seek out explosive hazards. Some may look at a destroyed vehicle and think the enemy is winning. However, when an RCV encounters an IED and Soldiers walk away, that vehicle—regardless of its state—has accomplished its mission. The former deputy PM AMS corroborates Soldiers' confidence in what the Army is fielding and their expressed pride in clearing a route for others, then walking away from the destroyed vehicle.

Growing Route Clearance Capabilities

In its infancy, PM AMS supported only a few vehicles that were procured to fill operational needs statements (ONS). As war requirements increased, PM AMS grew as well, currently managing 17 configurations of 5 different vehicle systems totaling approximately 1,500 RCVs.

The current fleet includes the Husky Vehicle-Mounted Mine-Detection (VMMD) System, the Buffalo® Mine-Protected Clearance Vehicle (MPCV), the Panther Medium Mine-Protected Vehicle (MMPV), the Joint Explosive Ordnance Disposal (EOD) Rapid Response Vehicle, and the

RG-31 Mine-Protected Vehicle (Route Clearance Variant). A core PM AMS team—composed of a systems acquisition manager, a systems engineer, and a logistician—is responsible for managing each vehicle system's life cycle.

Additionally, PM AMS employs multiple support teams to perform critical functions to ensure the organization's success. Charged with developing solutions to Army G-3 validated requirements and capability requests from theater, the PM AMS engineer integrated product team (IPT) has developed and/or integrated many crew survivability upgrades, including improved seats and seat belts; fire suppression systems; gunner platforms; gunner restraint systems; Objective Gunner Protection Kits (OGPKs); mine/IED rollers; rocket-propelled grenade and explosively formed penetrator protection kits; transparent armor (glass); and remote weapon stations. The IPT also integrated command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) upgrades—such as situational awareness cameras, light kits, driver's vision enhancement, and Blue Force Tracker systems. These enhancements have increased capabilities and effectiveness of the RCVs.

The business management team ensures that appropriate funding is available and conducts financial and other analyses to guarantee proper utilization of resources. The



U.S. Army Soldiers wrap a towing rope around the front end of an RG-31 MRAP vehicle during a mission in Afghanistan.



This U.S. Army Panther MMPV is equipped with a mine/IED roller to help neutralize or defeat explosive hazards.

fielding and sustainment team focuses on getting vehicles into theater and sustaining them once there. The RCV fleet and its subsystems are new pieces of equipment fielded to theater to support ONS requirements. The Army's logistics and sustainment infrastructure does not yet support the new equipment; therefore, to sustain the RCV fleet in-theater, PM AMS covers the support gap with a refined contractor logistics support (CLS) concept. According to the PM AMS logistics lead, the CLS concept provides logistics, training, maintenance, and repair operations at a number of battlefield repair locations in Iraq and Afghanistan. New equipment training teams conduct vehicle handoff to units and train Soldiers to operate and maintain RCVs and their subsystems.

A small quality assurance team ensures that PM AMS-developed vehicles are appropriate for Soldier use and meet all quality vehicle standards. Additionally, there are three other acquisition managers in charge of modernization, drawdown efforts in Iraq, and harvesting. The harvesting program will take a select number of RCVs and RG-33+ MRAP vehicles procured as ONS vehicles, upgrade them to RCV specifications, and return them to the RCV fleet. The Deputy Product Manager, PM AMS, described this very dedicated group that is constantly working to improve their

responsiveness to the Warfighter. Due to urgency and the constantly evolving threats, PM AMS realizes that developing an 80 percent solution immediately is better than developing a 100 percent solution three months from now.

POR Vehicle Development

PM AMS already has begun to procure and test the three program of record (POR) RCVs—the Husky, the Buffalo, and the Panther. POR-configured Huskys, Buffalos, and Panthers have already been fielded in-theater—albeit under urgent materiel release criteria—in support of current operations.

The Husky is extremely accurate in identifying a buried threat. It drives in front of convoys to detect suspected explosive hazards, marking them for identification. The Buffalo is a specialized mine-clearing/anti-IED vehicle equipped with a distinctive hydraulic arm that interrogates suspected explosive hazards and clears them when necessary. The Panther is a command and control vehicle designed to neutralize or defeat explosive hazards and is equipped with PackBot or TALON® robots. The robots provide route clearance or EOD units with standoff protection, since Soldiers can deploy and operate the robots from the Panther's

armored workstation.

PM AMS personnel are simultaneously completing other full materiel release requirements in preparation for fielding the POR RCV fleet of vehicles to units. The goal is to begin fielding POR RCVs in 2011.

Providing Confidence

Soldiers are highly confident of this lifesaving equipment. The PM AMS team, RCVs, and their integrated subsystems help defeat explosive hazards, clear routes, and save Warfighters' lives. With the confidence RCVs provide, Soldiers on route clearance patrol become the hunters. Everyone following in convoys has safe passage, because the RCVs are neutralizing the threats. 

Lieutenant Colonel Dease is the former product manager for PM AMS. He holds a bachelor's in business administration from Claflin College and a master's in acquisition and contract management from the Florida Institute of Technology. He is a graduate of the Command and General Staff College and the Program Manager Course. A member of the Army Acquisition Corps, he has earned level III certification in program management from the Defense Acquisition University.

Employing the Route Clearance Package in Afghanistan

By Major Gerald S. Law

Numerous articles have been written describing route clearance package (RCP) formations, equipment, and targeting; however, minimal references exist for employing the RCP. Therefore, this article presents lessons learned in Afghanistan for RCP employment. The intent is to change the way we think about tasking, managing, and employing the RCP. The article will not describe RCP tactics, techniques, and procedures used in Afghanistan.

What Is the Problem?

In May 2009, the 4th Infantry Brigade Combat Team (IBCT), 4th Infantry Division, deployed to the Nangarhar, Nuristan, Kunar, and Laghman (N2KL) provinces of Afghanistan to support Operation Enduring Freedom. N2KL, located in eastern Afghanistan, covers more than 25,000 square kilometers but contains only a small number of vehicle-accessible routes. Therefore, the Anti-Afghanistan Forces (AAF), which include all elements

fighting U.S. and coalition forces in Afghanistan, easily predicted where U.S. and coalition forces traveled and frequently inflicted casualties using improvised explosive devices (IED) and complex attacks.

To combat this threat, Combined Joint Task Force (CJTF)-82 allocated three RCPs to support the brigade. One RCP consisted of infantry and engineer Soldiers from the brigade's organic special troops battalion and one of its infantry battalions. The other two RCPs arrived from the engineer brigade supporting CJTF-82 in-theater; however, these two RCPs were task-organized as general support to the IBCT.

Who Controls the RCPs?

Who controls the RCPs, decides their missions, and approves the routes they clear? These questions raised concerns among staff members and commanders from CJTF-82, the IBCT, and the engineer



Photo by First Lieutenant Alex B. Armstrong

A Buffalo interrogates a suspected IED site along a key route in Afghanistan.



Photo by First Lieutenant Alex B. Armstrong

An RCP conducts operations in difficult terrain in Afghanistan.

brigade. Doctrine was referenced, slides were briefed, and arguments heard; in the end, it came down to common sense. The brigade combat team (BCT) controls the RCPs, decides their missions, and approves or disapproves the routes they clear. The BCT maintains responsibility for mission accomplishment, owns the assets, resources additional enablers, and synchronizes those assets and enablers in support of the brigade, battalion, or company.

For example, a battalion task force within the BCT is tasked to conduct a key leader engagement to assess the security situation within a village. The battalion develops a plan and tasks a company to accomplish that mission. Additionally, the battalion requests resources to facilitate mission accomplishment. The route to the village is expected to harbor IEDs, so the battalion ensures freedom of maneuver by requesting an RCP from the brigade. Furthermore, the battalion requests additional assets such as rotary-wing aircraft and intelligence, surveillance, and reconnaissance (ISR) assets to support the company and the RCP. The mission has a high probability of success, because the battalion task force, which is familiar with the area, decides it would be best to attack the device for this mission. The battalion provides a maneuver company to conduct the mission, requests the RCP to maintain freedom of maneuver, and allocates rotary-wing and ISR assets to support the company and the RCP.

Defeat the Network or the Device?

In the counter-IED fight, the BCT must decide to defeat either the network or the device. The primary and most desirable method for defeating the IED is to defeat the network. This involves data gathering and analysis, intelligence development, and action. Simply, the BCT plans and executes missions to remove an IED cell by eliminating its leadership, personnel, and resources. Additionally, this article argues that it's the BCT which mainly conducts the "decide, detect, deliver, and assess" process—not the RCP's parent unit.

Furthermore, if the BCT's command group or staff believes that the IED network still exists along a route and that mission requirements dictate movement or maneuver along that route, then the BCT resources and synchronizes the RCP to defeat the device. True, RCPs gather data and develop intelligence from acquired IEDs and IED parts found, which enable the BCT to defeat the network; however, the RCP's primary purpose at this point is to defeat the device.

What Routes to Clear?

RCPs clear routes in direct support of a BCT maneuver element conducting a mission. RCPs conducting missions that are not in support of a BCT

maneuver element are not defeating the device, but simply putting RCP assets at risk. This argument is based on three assumptions:

- AAF IEDs can damage or destroy RCP assets.
- AAF have more IED-making material and resources than U.S. and coalition forces have RCP assets within a BCT's area of operations.
- AAF can predict the routes U.S. and coalition forces use within a BCT's area of operations, thus giving the AAF the initiative.

Once an RCP clears a route, the AAF simply return and reseed it with new IEDs. Even if an IED is found, the RCP used its resources to clear AAF resources, which puts the RCP at risk and results in a net gain of zero. Therefore, RCPs must support a BCT maneuver element tasked to conduct a mission. Only then are they defeating the device. Examples of BCT maneuver missions RCPs may support include—

- Conduct a key leader engagement or border flag meeting.
- Deliver humanitarian assistance.
- Kill or capture a high-value target.
- Escort a combat logistics patrol.
- Conduct area or route reconnaissance.

Furthermore, an RCP defeats a device if it provides freedom of maneuver (freedom of movement) to the BCT element even if the RCP loses a vehicle in the process. For example, an RCP may lose a vehicle, but if the BCT maneuver element maintains freedom of movement along the route and succeeds in conducting the border flag meeting or delivering humanitarian assistance to a village, then the mission has been accomplished. However, an RCP that encounters an IED and loses a vehicle without providing freedom of movement to an element has allowed the AAF to defeat the RCP.

Remember that RCPs must support a maneuver element tasked to conduct a mission. The RCPs should not be sent out on “clear-a-route-we-haven’t-cleared-lately” types of missions. The AAF want U.S. and coalition commanders to commit RCP assets to clear routes not immediately vital to mission accomplishment.

Lessons Learned

- RCPs should support battalion missions. (Supported battalions work to have additional assets for operations.)
- RCPs are not stand-alone elements but support provincial reconstruction teams, agricultural development teams, companies, or platoons conducting missions in support of brigade, battalion, or company operations.
- The job of the RCPs is to clear routes that have, or are suspected of having, IEDs on them. It is not their job to clear routes that don't have IEDs.

- RCPs are put at risk when units send them to clear routes with no additional support. When units send RCPs to clear routes not required by a maneuver element, the RCPs are exposed to risk uselessly.
- RCP missions should be briefed 96 hours out to the brigade commander every day for approval. All operations from 24 to 96 hours out should be synchronized every day in the brigade operations synchronization meeting. This ensures that the BCT is supporting the RCP with maneuver elements, ISR, and rotary-wing aircraft.
- RCP missions that are not approved usually consist of—
 - Missions that require RCPs to travel on their own.
 - Missions to clear routes not in support of a BCT maneuver element requirement.
 - Missions nominated by brigade staffs to clear routes not in support of a BCT maneuver element.

Conclusion

RCPs are a critical asset to every BCT in Afghanistan. However, these assets are limited and must be tasked, managed, and employed properly. RCPs must support a BCT maneuver element conducting a mission. BCTs can either defeat the network or defeat the device in the counter-IED fight.

RCPs only defeat the device for the BCT maneuver element they are directly supporting. RCPs are not stand-alone units but support a battalion or company tasked to conduct a mission. If RCPs are not directly supporting a BCT maneuver element, then no device is defeated even if the RCP finds an IED and eliminates it. The brigade committed its RCP assets to eliminate an AAF resource, thus having a net zero gain. No mission was accomplished, the RCP was put at risk, and the AAF simply reseeded the route. RCPs should only support a maneuver element conducting a mission requiring freedom of movement or maneuver. 

Major Law is the brigade engineer for 4th Infantry Brigade Combat Team, 4th Infantry Division, Fort Carson, Colorado. Past assignments include detachment commander and battalion operations officer, 3d Battalion, 361st Engineer Regiment, 5th Armored Brigade (Training Support Brigade), Fort Carson; assistant brigade engineer, company commander, 44th Engineer Battalion, 2d Infantry Division, Republic of Korea; platoon leader, 618th Light Equipment Engineer Company, 82d Airborne Division, Fort Bragg, North Carolina; and platoon leader and assistant brigade engineer, 307th Engineer Battalion, 82d Airborne Division, Fort Bragg. He holds an associate's degree in welding engineering from Ricks College, Rexburg, Idaho; a bachelor's in industrial engineering from Utah State University, Logan, Utah; a master's in geology and geophysics from the University of Missouri–Rolla (now Missouri University of Science and Technology), Rolla, Missouri; and a master's in military arts and sciences from the United States Army Command and General Staff College, Fort Leavenworth, Kansas.



LIFE AS A NATO ENGINEER

By Major Matthew F. Louvet

Individual augmentee taskings are daunting enough by themselves, but getting orders as a senior captain to be a chief engineer on a North Atlantic Treaty Organization (NATO) staff was especially intimidating. Things started to look up when I finally made contact with the British captain that I was replacing, but then I discovered that as chief engineer, I was replacing not only him, but his entire platoon as well.

The duty description did little to calm initial fears: *Advises Commander, Headquarters Support Group, on all matters concerning civil engineering and building construction support. Leads a team of more than 100 Soldiers and civilians; evaluates legal construction requirements; evaluates headquarters constructional and maintenance requirements, initiates inputs for funding, and supervises execution and quality control; develops specifications for NATO construction projects, acts as project officer, coordinates projects concerning purchasing, contracting, and local firm selection; oversees site/space management; leads military in case of specialized survey; supervises more than 25 local civilian employees; acts as technical expert during contract award committees; supervises fire department; supervises work force and prioritization of all daily work requests across the International Security Assistance Force Headquarters Camp.*

I knew I could handle the job of project manager, but wondered about acting as contract manager, technical expert in building things, and managing a fire department. After a meeting in Kabul with the British captain and his platoon, the “right seat ride” began. I learned that I would be responsible for all the daily maintenance of the camp, site management and all contract work on the camp up to €10,000, the fire department, and all NATO paperwork for the national assets that were on the camp.

At first, my crew consisted of just two air conditioning technicians, a metal worker, and three other workers for the entire camp. I was also managing large contracts for plumbing and generator support. Both helped to reduce the initial problems resulting from the limited number of

workers available. As time went by, noncommissioned officers from NATO armies arrived and were assigned to our shop: an aviation electrical repair specialist, an aide de camp, a personnel specialist with experience as a construction engineer, a combat engineer, and a generator mechanic. Luckily, a contract through NATO for a civilian workforce had been started. Soon our workforce increased by two civilian managers and about 20 local national skilled laborers, and we were able to manage the approximately 20 new work orders that came in daily. From something nearly chaotic, we produced a system where work orders were dropped off at the lodging office or at our shop and then assigned a priority. The priorities were relatively fixed, so it was no problem getting jobs into the right order. This allowed concentration on contract jobs occurring outside the camp’s daily maintenance.

There were usually 8 to 10 job sites—separate from routine maintenance on the camp—to be supervised daily. By the end of my six-month rotation, there were 20 or more companies available to bid on each job. To bring in a contractor, job requests had to be outside the scope of the local workforce. The NATO equivalent of a performance work statement would be drawn up and taken to the contract office. Representatives from interested companies were escorted individually to the sites and told what they would have to accomplish. Bids were reviewed and the company chosen. After the contract was written and signed (and security checks performed), work times were coordinated so that the company’s workers could get on the camp with whatever materials they needed. After that, all that was required was supervision, quality control and, finally, approval of the completed project.

Escorting contractors individually became a job in itself. Eventually a system evolved with a weekly tour, lasting from one to three hours, with all the contractors who wanted to bid on current jobs. The contractors then had a week to bid on all the jobs they wanted. (Emergency jobs were awarded based on the ability and history of the contractors.) The system made things run smoothly,



Afghani contractors replace a concrete roof at the International Security Assistance Force headquarters camp.

especially for the contracting office that handled all the paperwork.

Working in a NATO environment had its own set of challenges. For example, there were security issues of getting local nationals into secure areas to make repairs. To ensure proper supervision, the facility security force was assisted by someone from whatever shop needed the repairs. If escorts were not available on a particular day, repair jobs were time-shifted, adding another layer of negotiations to the process.

There was also a grey line dividing NATO jobs from national jobs. The NATO work force was not funded to perform work for the national assets that resided on the camp. It did perform such work, but costs were billed directly to the country involved. If the NATO engineer shop had not done repairs for the individual nations, the nations would have had to hire, escort, and pay their own contractors to get the work done. None of the national elements had the same knowledge of local contractors as the NATO engineer office, which was able to satisfy all the NATO and national assets.

The NATO chief engineer was responsible for keeping data, which was reported monthly to NATO headquarters, on the square footage occupied by each country. This number was translated into a dollar amount and billed to the individual countries. Managing the land inside the

compound became an exercise in negotiations as the individual countries sought to expand their footing on a camp with limited space. Also, there were other agencies working as part of NATO that wanted to establish themselves on the compound. Any new construction or expansion brought with it an increase on the electrical load, water consumption, and space requirements for new personnel.

The easiest part of the job was managing the fire department. It was a contract job with two shifts that worked on-site for six months each. Thankfully, there was no need to call on them to perform their duties.

The tasker offered a wealth of knowledge, although that was not obvious until it was finished. Project management was essential to successfully performing the task at hand and keeping the leaders happy. A good crew of workers, from all walks of life and backgrounds, was critical to the success of every undertaking. Without the international help and the local contractors, the little team would never have been able to deal with all the daily work orders and ongoing contracted projects.



Major Louvet was the chief engineer for the International Security Assistance Force headquarters camp while on a six-month Worldwide Individual Augmentation System tasking. He is the brigade engineer at 3d Brigade Combat Team, 1st Infantry Division, Fort Knox, Kentucky.

LEVERAGING THE DEPLOYABLE COMMAND POST

By Major Jon Brierton

In 2008, engineer units in the United States Army Reserve completed transformation to a fully modular force. Nearly all the engineer units struggled with turning in old equipment and reorganizing their formations to the new modular structure. With the new modular organization finalized, the question arose: Do engineer modularity and the deployable command post (DCP) concept and structure work in the Army Reserve? The old models of legacy formations and operations worked for a legacy force, but will they work for a modular force, and how do we function day to day with DCPs?

Making the Concept Work

This article describes how the 463d Engineer Battalion makes modularity and the DCP concept work in the Army Reserve. The battalion has been able to leverage the concepts of modularity through a mix of current doctrinal and legacy staff functionality. The derived command post configurations enabled the staff to effectively provide command and control across the battalion's sphere of influence.

As the new operations (S-3) officer of the 463d, which was newly reorganized as a modular engineer battalion, I was uncertain how the modular staff was supposed to function. I sought guidance from the battalion commander on his intent and vision for the command. Furthermore, I consulted with my peers and other field grade engineer officers across the Army Reserve to see what other units were doing, what techniques were being used, and what issues and challenges they were dealing with. My goal was to seek out and leverage the best tactics, techniques, and procedures rapidly in order to develop a plan that would meet the battalion commander's intent of maximizing training time for operations in preparation for a potential deployment the following year.

Doctrinal Foundation

The DCP construct dates back to 2003 as a concept in the Objective Force Initiatives for higher-echelon headquarters staffs configuring for contingency operations. Today, we see engineer brigades and higher commands operating DCPs in Iraq and Afghanistan. The two DCPs operate on a cyclic rotation, with DCP-1 planning and executing a given operation while DCP-2 is planning the next operation or standing down for resupply/recovery. The DCP concept provides flexibility and

continuous battle command for full spectrum operations.¹ Both DCPs can perform independent operations in noncontiguous areas of operations.² According to the table of organization and equipment (TO&E) unit reference book published by the United States Army Maneuver Support Center (now the United States Army Maneuver Support Center of Excellence [MSCoE]), the doctrinal purpose of the DCP for a modular engineer battalion is to exercise battle command over dispersed locations or to augment the brigade troops battalion of maneuver brigade combat teams.³ The reference also provides the layout for each of the two DCPs and descriptions of personnel and equipment authorizations.

Operational Environment

In general terms, Army Reserve units are either preparing for or executing battle assemblies or extended combat training operations or conducting missions in an area of responsibility to support contingency operations. In today's era of persistent conflict, many Army Reserve units do all of the above simultaneously. Further, as a result of numerous deployments to support contingency operations and many other external factors, unit personnel strength is declining and more Soldiers are nondeployable. The effects include undermanned staffs with essential or primary positions filled by lower grade or less-experienced personnel. This is not necessarily a bad thing, because it provides opportunities for junior Soldiers to step up and perform at the next level, ultimately improving our junior leader core leadership attributes. However, all these factors make planning and executing operations even more difficult. Combine these factors with an aggressive Army Force Generation "available" year training plan developed in preparation for a deployment, and the outcome is a battalion leadership triad faced with a complex synchronization and resource challenge.

Concept Challenges

While reflecting on the DCP doctrine, consulting with peers, and observing higher headquarters trying to operate daily under the DCP construct, it became apparent during battle assembly/home station periods that the DCP concept inhibits staff cohesion. Further, it degrades unity of effort by promoting stovepiping and additional battle rhythm requirements. One reason it did not work was that the staff members who transformed the unit—and had a better understanding of how to

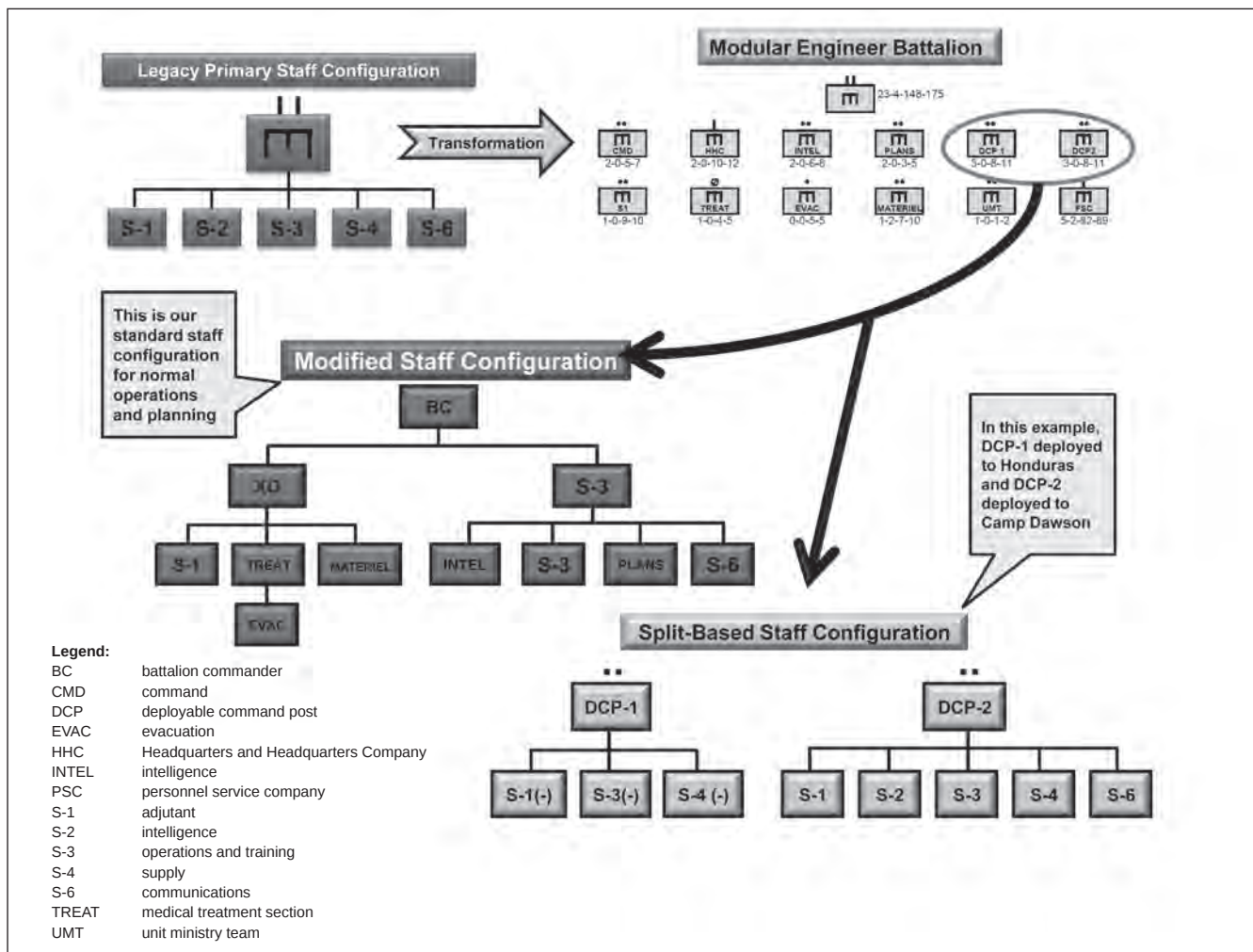


Figure 1

operate under the modular concepts—were gone, due to promotions and other transfers. The new staff members did not fully grasp the new concepts and complexities of operating under the DCP construct. Another reason was that there were not enough Soldiers assigned, and the battalion could not afford to have the staff split and going in two separate directions. Staffs operate better under a legacy construct and mentality because it is familiar and has proven to work efficiently. However, when the battalion transitions from a training focus to an operational focus conducting split-based or decentralized operations, the DCP concept works because it provides flexibility and effective command and control.

Concept Incorporation

As the start of the new training year approached, the battalion staff developed an aggressive plan to leverage training events in order to set conditions for a potential deployment while continually striving to improve readiness. The MSCoE unit reference book provides a doctrinal DCP organizational template that is in line with the unit manning roster. However, this configuration does not always fit every situation. The first order of

business was to develop DCP structures that would best fit the battalion's situation and training plan for both normal and split-based operations (Figure 1). For normal operational periods, the staff was configured in legacy functional roles with the executive officer (XO) in charge of the adjutant and supply staff primary officers, and the S-3 officer was in charge of the intelligence, communications, and S-3 section (which included plans). This staff configuration would not work for split-based operations, because not all staff functions reside under one of the battalion field grade officers. Many other situations and external influences required alterations to the standard DCP structure as well. For instance, according to doctrine, the DCP-1 commander is the battalion XO. However, in this instance, the XO was not available for the mission, so the battalion commander led DCP-1 and the S-3 officer led DCP-2.

One of the key attributes of modularity is tailorable “plug-and-play” functionality. The DCP offers the same tailorable flexibility. The DCP-1 staff was formulated and manned with approximately 14 personnel to achieve command and control of engineer forces conducting construction operations to support Operation Beyond the Horizons in Honduras. Logisticians who focused their efforts on providing operational and

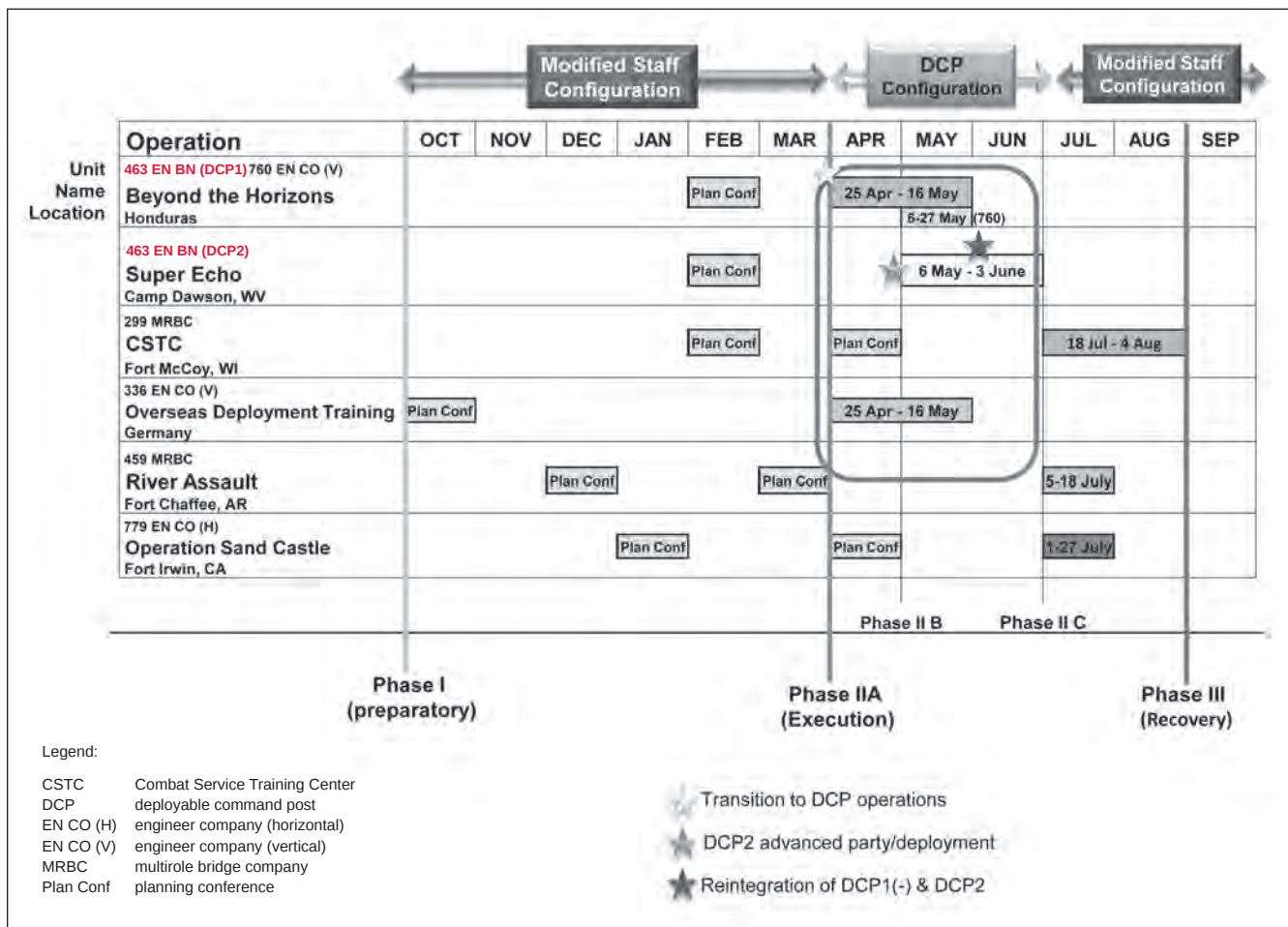


Figure 2

engineer logistic support to the Beyond the Horizons rotational task force comprised the majority of the DCP-1 staff. To manage expectations and provide some predictability, the battalion developed a phased approach to meeting training goals, fulfilling operational requirements, and meeting the commander's intent (Figure 2).

Phase I. During this phase, the plan established expectations and provided task and purpose for the battalion and all of the subordinate units by phase. The battalion operated along legacy functional staff lines and maintained the normal battle rhythm.

Phase II. As we approached Phase II, battle rhythm requirements increased, and we transitioned into DCP staff configurations.

- During Phase II-A, the battalion commander and his DCP-1 staff deployed to Honduras to support Operation Beyond the Horizons, while I led DCP-2, consisting of the remainder of the staff, in Wheeling, West Virginia. DCP-2 was responsible for maintaining situational awareness and battle tracking of DCP-1 in Honduras and the 336th Engineer Company in Germany. DCP-2 was also setting conditions for subordinate unit extended combat training while conducting day-to-day operations and preparing for our deployment to Camp

Dawson, West Virginia, to support Operation Super Echo, the 412th Theater Engineer Command's course to combine military occupational specialty (MOS) 21J, vertical construction operator, with MOS 21E, horizontal construction operator.

- During Phase II-B, DCP-2 deployed to Camp Dawson and hosted Operation Super Echo while concurrently providing tactically focused extended combat training for headquarters and field service companies and maintaining situational awareness and battle tracking across the battalion. Midway through Phase II-B, DCP-1 redeployed to the continental United States and joined DCP-2 at Camp Dawson. With both the command posts together at Camp Dawson under the battalion commander, the staff reassembled and resumed normal functionality and planned for future operations for the remainder of training year 2009 and the first quarter of training year 2010.

Lessons Learned

To meet the commander's intent and improve readiness across the battalion, the major points to make the DCP concept work are to—

(Continued on page 56)



The Role of the Engineer School in Collective Training

By Mr. Shawn M. Bowen

There are probably more glamorous subjects to read about, but this one is important to everything we do—every day—in the Army: *standards*. There is a standard established for every task that we do in the course of our daily efforts. But how do we determine the correct standard? In the engineer field, this is done by the Collective Training Division (CTD) at the United States Army Engineer School. Anyone out in the field who has not visited the Engineer School may have no idea about what CTD does. Since individuals in CTD are either retired or active duty military, they consider the same questions you have. Training management in today's modular Army is confusing to many, and regardless of the technologies available, most people are too busy to spend their time looking for the latest and greatest items available. The biggest problems for training management seem to be—Who does what? Where do I find it? Whom can I talk to? What is the phone number? For example, a unit executive officer had been searching for collective task outlines for more than a month when he stumbled onto a link to CTD, allowing us to quickly steer him in the right direction for all of his training management needs. The first question—Who does what?—is easy; answers to the remaining questions above can be addressed to the telephone contact or at the online site at the end of this article.

Collective Training Division

CTD is an organization within the Engineer School Directorate of Training and Leader Development (DOTLD) that is responsible for the analysis and development of all collective training products for every engineer unit in the Army. The chief of CTD works for the DOTLD. There are currently five civilian employees and two senior noncommissioned officers (NCOs) assigned to the division. These NCOs typically have had extensive

platoon sergeant experience and recent deployments to today's operational theaters. Civilians, along with their institutional knowledge, bring their experience of writing tasks and developing training products for the field. These combined attributes offer a fresh perspective to training product development.

Combined Arms Training Strategy

The engineer field has 18 different military occupational specialties (MOSs). CTD develops collective training and evaluation outlines (T&EO) for each

MOS. Combined Arms Training Strategy (CATS) products have replaced the Army Training and Evaluation Program (ARTEP) manuals. As the Army's overarching strategy for current and future training of the force, CATS is designed for use within the Army Force Generation (ARFORGEN) cycle—enabling the unit to ramp up its training intensity according to its deployment cycle. The basis for CATS is a series of proponent, unit, and institutional strategies describing training events, frequencies, and resources required to train to standard—and describing how the Army will train the total force to standard in the institutions and units. CATS also documents the quality and justification for all training resources required to execute the training. Collective task outlines are accessible through Digital Training Management Systems (DTMS).

Full Spectrum Operations Mission-Essential Task List

The Engineer School, in conjunction with the Combined Arms Center—Collective Training Division (CAC-CTD), is responsible for the development of the theater engineer command and engineer brigades' full spectrum operations (FSO) mission-essential task list (METL). The review of the FSO METL is conducted semi-annually by the Army METL Review Board (AMRB), which ensures that the Headquarters, Department of the Army (HQDA)-approved standardized FSO METLs are synchronized with—

- Strategic environment as defined by the Army Training and Leader Development Guidance (ATLDG) and ARFORGEN.
- Table of organization and equipment (TO&E)-designed mission (mission profile) of selected Army brigade and higher-echelon units.

- Any changes in doctrine and the regulations governing task design.

CAC is the HQDA executive agent for the FSO METL, which represents those minimum fundamental doctrinal tasks that a unit was designed to perform in any operational environment.

A standardized FSO METL provides the readiness community a yardstick with which to compare the readiness of like units, while providing unit leaders the flexibility needed to focus on those fundamental METL tasks that need training. Unit leaders train on FSO METL supporting tasks and under conditions that support mission readiness. Commanders will use HQDA-approved, standardized METL and focus training on the METL tasks not assessed as “trained.” Units will train on one METL—their FSO METL, which is augmented only when the unit is assigned a mission it was not designed to perform. If the assigned mission is outside of the unit’s core functions/designed capabilities, the commander will analyze the assigned mission, identify the mission-essential tasks and, if necessary, add additional tasks to the unit’s FSO METL as a temporary modification to accommodate the assigned mission.

Technical Rescue Collective Tasks

The newest additions to the engineer collective tasks are technical rescue (TR) tasks, which enable engineer leaders to enhance the training strategy for civil support operations. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (known as the Stafford Act) is the primary federal statute giving the President power to direct federal agencies to provide assistance to state and local authorities during an incident. The purpose of this assistance is to save lives, alleviate human suffering, protect public health and safety, and lessen or avert the threat of a catastrophe. In the past, engineers have provided civil support and most certainly will be called on in the future to do so. It is imperative that engineers have the knowledge and trained capabilities to assist state and local governments in time of need. TR is a complex operation combining Department of Defense personnel and civilian first responders. Legal thresholds and certifications are areas of concern, but there is no doubt that bringing engineers to the fight dramatically enhances capabilities and saves lives.

CTD Access and Contact

Through the Army Knowledge Online (AKO) site for Engineer Collective Training, you will have access to the above-mentioned products and the people within CTD. For further information about training management, call (573) 563-6237. 

Mr. Bowen is a training developer for the United States Army Engineer School Collective Training Division at Fort Leonard Wood, Missouri. He retired from the Army after 20 years of service and holds a bachelor’s in business administration from Columbia College in Columbia, Missouri.

(“Leveraging,” continued from page 54)

- Alter the task organization to fit the situation in order to leverage flexibility during split-based or decentralized operations.
- Operate as a legacy functional staff during normal operational periods with the XO or DCP-1 commander overseeing the adjutant and supply staff sections, while the S-3 or DCP-2 commander oversees the intelligence, S-3, and communications staff sections.
- Synchronize staffs jointly between the XO at DCP-1 and the S-3 at DCP-2.
- Develop depth on the bench by empowering NCOs through cross-training in multiple staff section roles while inculcating the traits of agility and flexibility.
- Ensure staff situational awareness and understanding by maintaining a common operational picture and battle rhythm.

Ultimately, the DCP concept was designed to enable flexibility and provide continuous battle command. This does not necessarily mean that DCP-1 is the day shift and DCP-2 is the night shift or vice versa. However, they could function that way if the situation dictated.

Conclusion

The DCP construct, coupled with synchronized staff actions, enables the battalion to maintain unity of effort during split-based operations or deployments while retaining agility and flexibility. Although not the textbook example, the 463d Engineer Battalion was able to leverage the capabilities of the DCP concept and the junior staff to meet the commander’s intent. Furthermore, through executing the lessons learned, the 463d improved readiness within the battalion and across the 412th Theater Engineer Command. 

“Hammer On, Drive It Home!”

Major Brierton is the executive officer of the 463d Engineer Battalion. He has served as the chief of operations for the 412th Theater Engineer Command, deployed to Iraq as the plans officer and battle captain for the 983d Engineer Battalion, and commanded a light equipment engineer company. He is a graduate of the United States Army Command and General Staff College, Fort Leavenworth, Kansas, and holds a master’s in organizational management from the University of Phoenix.

Endnotes

¹Field Manual 3-34, *Engineer Operations*, April 2009, p. 2-9.

²United States Army Training and Doctrine Command (TRADOC) Pamphlet 525-3-01, *United States Army Objective Force Battle Command (C4ISR) Concept*, 2003, p. 43.

³Maneuver Support Table of Organization and Equipment Reference Book, United States Army Maneuver Support Center of Excellence, Fort Leonard Wood, Missouri, April 2008, p. 9-22.



THE NEED FOR DEDICATED TECHNICAL RESCUE COMPANIES

By Staff Sergeant Jesus B. Cuartas

Technical rescue is a discipline most commonly associated with civilian firefighters and local emergency responders, but the principles of technical rescue are exercised quite frequently throughout the Engineer Branch of the United States Army. Technical rescue refers to those aspects of saving life or property that employ the use of tools and skills that exceed those normally reserved for firefighting, medical emergency, and rescue crews. These disciplines include the following:

- Rope rescue
- Swiftwater rescue
- Confined-space rescue
- Ski rescue
- Cave rescue
- Trench/excavation rescue
- Building collapse rescue¹

Although the Branch is consumed by the need to sustain combat, geospatial, and general engineering operations throughout the world, the fourth element of operations—civil support—must not be overlooked. The United States Army is continually called on to serve at home and abroad in response to natural and man-made catastrophes. In 2001, the Army helped after the attacks of 11 September;

in 2005, it responded to Hurricane Katrina; and in 2010, it sent troops to help after the catastrophic earthquakes in Haiti on 12 January.

In 2002, United States Northern Command (NORTHCOM) was established to assist federal homeland defense efforts and coordinate support for civil authorities. Since then, three brigades have been scheduled to serve as Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) Consequence Management Reaction Forces (CCMRFs). Although tailored to CBRNE events, a natural prerequisite exists for the incorporation of a technical rescue element within these brigades. Most of the contingency plans require that the military provide elements to help coordinate and execute response to events perpetrated against the United States.

In July 2009, the commander of NORTHCOM testified before Congress about the CCMRF's composition and capabilities. He explained that a CCMRF is a task force of approximately 4,700 people that operates under the authority of Title 10. It is self-sustaining and may be tailored to any CBRNE event. A CCMRF is composed of units with unique CBRNE training and equipment from the Army, the United States Marine Corps, the United States Navy, the United States Air Force, and general purpose units trained to operate in proximity to a hazardous or contaminated environment. CCMRF capabilities include the following:



Soldiers from the 911th Engineers perform search and rescue operations at the Pentagon after the 11 September 2001 attack.

- Event assessment
- Robust command and control
- Comprehensive personnel and equipment decontamination
- Hazardous material handling
- Air and land transportation
- Aerial evacuation
- Mortuary affairs
- General logistical support to extended operations

Although focused toward United States Army Chemical Corps responsibility, a dedicated technical rescue company providing rescue efforts would alleviate some of the burdens of the chemical response force, allowing it to focus primarily on the chemical response. According to a former commander of the Army's 911th Engineer Company

(Technical Rescue), Fort Belvoir, Virginia, CCMRFs already have a technical rescue capability requirement. CCMRF-1 uses a chemical-biological incident response force platoon and CCMRF-2 and CCMRF-3 use United States Army Reserve firefighting detachments combined to form a platoon-size capability. However, a platoon-size element cannot conduct sustained technical rescue operations, especially in response to a major collapse mission. The CCMRF also has a heavy equipment requirement, which has been filled by the Air Force.

If a company structured the same as the 911th were established, it could provide an immediate capability even greater than that of typical civilian first responders. It could provide an intermediary between civilian and Department of Defense (DOD) responders, and also provide assets such as heavy lifting capabilities through the use of engineering equipment not commonly found outside of dedicated Federal Emergency Management Agency (FEMA) task forces located nationwide.

DOD now has two units with bioterrorism response capabilities—the Army's Technical Escort Unit and the Marine Corps's Chemical-Biological Incident Response Force. Separating the technical rescue aspect from these elements and structuring self-sustaining units focused on technical rescue would allow mobilization of the elements to disasters without compromising the overall effectiveness of our national security posture.

The U.S. response to the 12 January earthquakes in Haiti illustrates the need to strengthen the nation's technical rescue response capability. U.S. military engineers used heavy equipment to clear rubble obstructing rescue sites and assessed the stability of damaged structures. While focusing on the restoration of essential public services such as electricity and water, U.S. military engineers also had an important role to play in search and rescue activities, working with civilian structural experts from the United States Army Corps of Engineers. Personnel trained in multiple aspects of technical rescue are in extremely high demand, and FEMA task forces from all over the nation were deployed to conduct rescue operations after the earthquakes. It was the first time that California Task Force 1 (CA-TF1) from Los Angeles was deployed as an entire element of more than 200 personnel.

Unfortunately, once Los Angeles's best-trained personnel were deployed to Haiti, California itself suffered from catastrophic landslides resulting in a need for technical rescue personnel to respond. If more Soldiers who deployed to Haiti had been ready to perform urban search and rescue operations without on-site training, perhaps more CA-TF1 personnel could have remained stateside to perform their missions of national response. An alternative plan would be for the Army to send a small element, proficient in technical rescue, embedded in DOD assets such as FEMA. The technicians in that element could bridge the gap between military and civilian responders, knowing how to allocate assets and which military personnel were best suited to the situation.

Looking downrange also highlights the possible need for elements trained and equipped to conduct technical rescue operations. Some of the skills—especially rope rescue—associated with technical rescue could be essential. Also, being able to provide relief efforts after insurgent attacks could greatly aid in the campaign of winning over the trust of the local populace. On numerous occasions in Iraq, civilians tried to handle rescue efforts following large-scale insurgent attacks. Having elements trained, or being able to train, local responders in rescue efforts would show our continual dedication to improving local conditions. Already in place within the armed forces are elements that serve as combat search and rescue (CSAR) teams. One element in the forefront in these operations is the United States Air Force CSAR teams. According to one estimate, 2,800 lives have been saved by Air Force CSAR since 2001.² The Air Force even has a specialty—combat rescue officer—which was created to help strengthen the service's ability to conduct personnel recovery. One phase of the combat rescue officer course focuses specifically on technical rescue.

Having engineer companies or components trained in technical rescue would greatly strengthen the Army's response capabilities when called on to deploy for support operations throughout the world. A United States Government Accountability Office (GAO) report about Hurricane Katrina stated: "Several factors affected the military's



A 911th Soldier practices a complex highline rope rescue at the Fort Belvoir, Virginia, hospital.

ability to gain situational awareness and organize and execute its response, including a lack of timely damage assessments, communications difficulties, force integration problems, uncoordinated search and rescue efforts, and unexpected logistics responsibilities. Without detailed plans to address these factors, DOD and the federal government risk being unprepared for the next catastrophe."³ Task forces composed of air assets, medical personnel, and construction engineers were developed and put into play. On multiple occasions throughout the GAO report, the call for a structured military element to coordinate and execute search and rescue efforts—from the actual efforts to the logistical planning and coordination—was highlighted. The report emphasizes the inability to find common ground between civilian and DOD elements to allow a fluid response. One issue is a lack of common terminology, which is a key component of the National Incident Management System used by civilian authorities to coordinate joint efforts at an emergency site.



Soldiers from the 911th Engineers practice sling loading while the immediate response team prepares to lift off.

Having engineers throughout key response divisions such as the 82d Airborne Division would greatly enhance their response efforts. Sending selected Soldiers and officers to technical rescue training with the 312th Training Squadron at Goodfellow Air Force Base, San Angelo, Texas, and the 911th Engineer Company could ensure that the military had personnel trained in rescue who could respond to future incidents. There are already officers throughout the Army who are dedicated to the coordination of federal, civilian, and DOD operations, but having lower-echelon personnel who can coordinate those elements could greatly improve efficiency. Having a foundation in various rescue disciplines would permit an easy transition from Soldier to first responder. This would eliminate the need to get on-the-spot training on marking buildings according to FEMA standards or conducting personnel search and recovery using the right tools.

The Engineer Regiment's motto of "Essayons" is demonstrated, time and time again, as members of the 911th Engineer Company show their resiliency and no-quit attitude on every rescue operation. Establishing that capability in key regions throughout the nation would greatly contribute to the Army's overall readiness posture when performing civil support operations. 

Staff Sergeant Cuartas is the operations noncommissioned officer (NCO) and information management officer

for the 911th Engineer Company, 12th Aviation Battalion at Fort Belvoir, Virginia. Previous assignments include team leader, battalion unit-level logistics system-ground NCO, and platoon leader's gunner with 1st Infantry Division, Fort Riley, Kansas. He has deployed twice for Operation Iraqi Freedom.

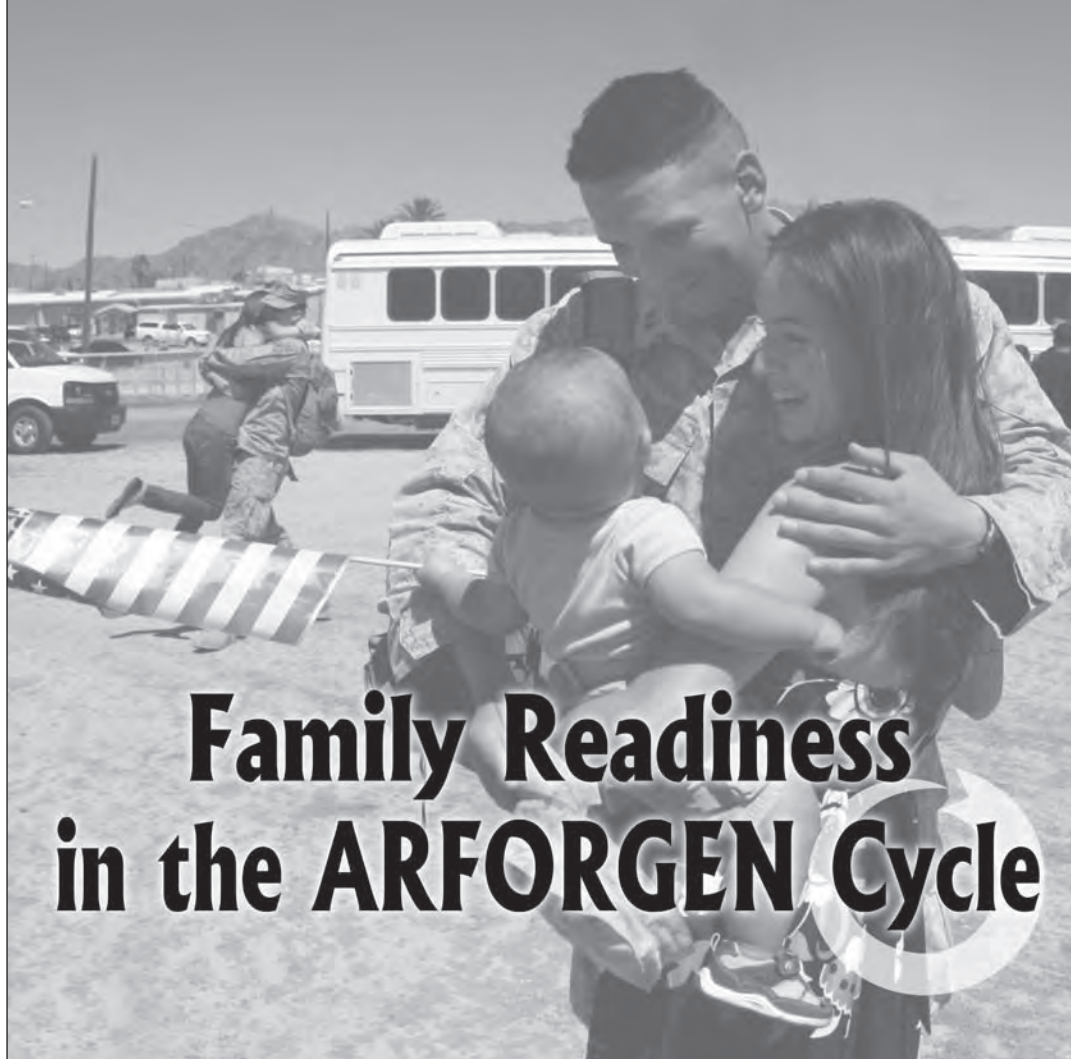
Endnotes

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Family Readiness in the ARFORGEN Cycle

By Captain Kyle P. Moore and Mrs. Erica G. Koelder

Since the Army Force Generation (ARFORGEN) cycle of *Reset-Train/Ready-Available* was established in 2005, units and installations throughout the Army have been viewing all aspects of readiness, training, and Army life through this new lens. The executive officer of 1st Engineer Battalion, Fort Riley, Kansas, framed the sustainment and logistics plans, and the battalion operations and training officer framed the training plan for the battalion around ARFORGEN. The 1st Infantry Division chief of staff directed the assistant chief of staff for resource management to come up with new graphics and charts to show how units spend operational funds based on this cycle, rather than on a fiscal year. However, family readiness is still not framed in terms of ARFORGEN.

Family readiness is a task outlined to all commanders in Army Regulation 600-20, *Army Command Policy*. Units give it a high priority, but there is no standing operating procedure or guideline stating what the unit's family readiness goals should be within the ARFORGEN cycle. This article contains a comprehensive guide on specific tasks and goals for family readiness during each phase of the ARFORGEN cycle. The significance of this guide to the Engineer Regiment is that companies and battalions often deploy separately from the battalion or brigade to which

they are assigned in the garrison environment. A company that deploys separately from its battalion will not necessarily have the support of a battalion staff when conducting the military decisionmaking process. This can leave family readiness tasks within the ARFORGEN cycle up to individual leaders. The solution is to establish an ARFORGEN plan that includes family readiness.

Reset

The reset part of the cycle gives leaders the chance to reconstitute the family readiness group (FRG) and make it what they would like it to become. Everyone who has been in the Army has an FRG experience—either positive, neutral, or negative. The reset phase is the time when commanders can make the FRG experience positive for spouses and families of single Soldiers. Commanders can set the FRG's parameters: Who will be the leader? When and where will meetings occur? Is participation mandatory or voluntary?

Another key component of the reset phase is the creation or continuation of a battalion-level FRG steering committee. This should be a monthly meeting led by the commander. It should be attended by the battalion commander, command sergeant major, plans and operations officer,

senior FRG advisors (often the spouses of the commander and command sergeant major), family readiness support assistant (FRSA), rear detachment commander and first sergeant, and all the FRG leaders. By making this meeting a habit early and often, everyone will see what will occur in the months to come. The team building done in this phase will assist the group in problem solving while the unit is deployed. By setting the standard during this phase, the unit will be able to establish a normal battle rhythm that all FRG members can anticipate. The Army family thrives on schedules and knowledge of events.

Train/Ready

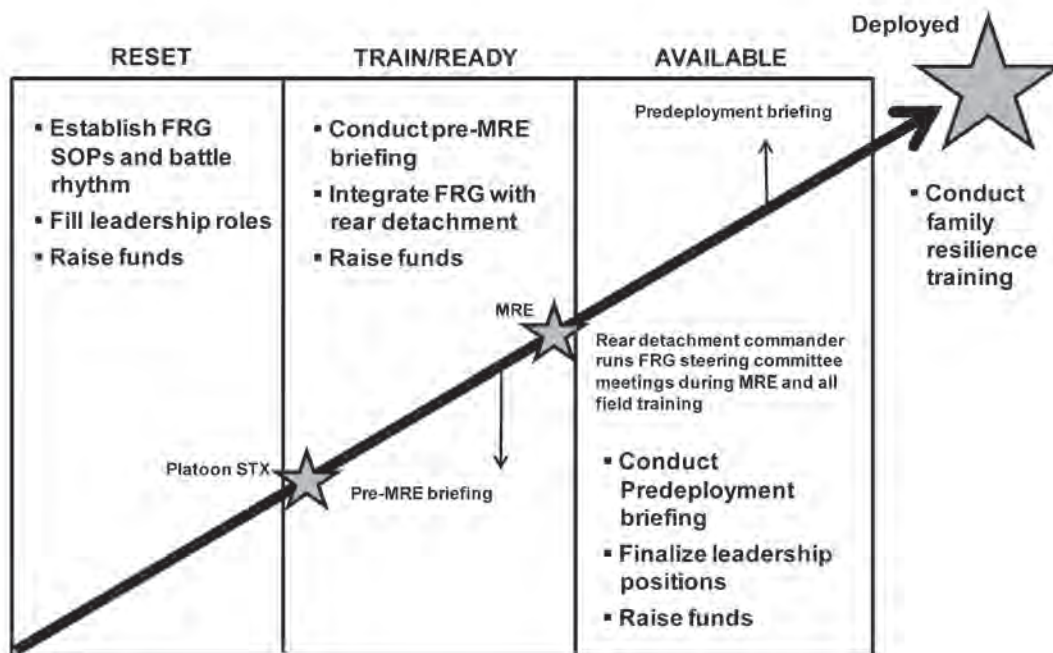
This is the stage where it will become apparent to an astute leadership group that it is too late to start forming a positive, well-functioning FRG. During this time, the unit is preparing to conduct a mission rehearsal exercise (MRE), often at the National Training Center at Fort Irwin, California, or the Joint Readiness Training Center, Fort Polk, Louisiana. This is a great opportunity to hold a pre-MRE briefing for the unit Soldiers and families. The rear detachment leaders will get their first taste of how their team will form in the absence of the main body. By taking advantage of the main body's absence and working through an MRE briefing, both the rear detachment element and the Soldiers and families will be

able to prepare for the upcoming deployment. In addition, it is the first opportunity for the families to build a trusting relationship with the rear detachment. There are some Armywide factors that go into a successful MRE briefing. These include, but are not limited to—

- A briefing led by the senior commander deploying to the MRE.
- Rear detachment leader attendance to give the families a proper introduction.
- Army Community Service presence to show families the resources available.
- FRG leader involvement to show the families who will be their first line of information from downrange.
- After action review feedback from the FRG steering committee members.

This pre-MRE briefing can also be used as a dress rehearsal for the predeployment briefing given during the available stage. It is up to the leaders to give families as much of an opportunity as possible to ask questions and get involved in the upcoming deployment. This empowers the families to make smart decisions leading up to the Soldiers' departure and to continue to make smart decisions on behalf of the Soldiers while they are gone.

Family Readiness as Viewed Through ARFORGEN



Legend

ARFORGEN - Army Force Generation
 FRG - family readiness group
 MRE - mission rehearsal exercise
 SOP - standing operating procedure
 STX - situational training exercise

Available

This is the calm before the storm. The center of gravity for family readiness in this phase is a pre-deployment briefing, which should be a reflection of the pre-MRE briefing, made better by the after action report comments received a few months earlier. Keeping the same “shape” to the meeting allows the families to become familiar with the process. On top of the components from the MRE briefing, a deployment book or packet should be distributed to all Soldiers, single and married. The deployment packet should include items such as—

- A checklist of important documents.
- A list of all applicable powers of attorney.
- Red Cross information.
- FRG and rear detachment contact information.
- Other information required by the command group.

Commanders and FRG leaders should be stationed at tables so that families can update family information forms and interact with each other. Another station should be set up for single Soldiers to remit their packets to a selected staff member. This packet should be mailed to the Soldier's next of kin (as established on the family information form, DD Form 93, *Record of Emergency Data*, and Servicemembers' Group Life Insurance forms.) Depending on the size of the unit and the number of missions it will be serving, the event may need to be conducted over several days. Again, an after action report should be conducted with the FRG steering committee members to identify any unresolved issues brought up by the families at the event. The rear detachment and the FRG steering committee should take the lead on addressing the issues to give further confidence in the program's legitimacy and competency in the eyes of the families.

Not paying proper attention to the FRG during this phase has potentially dangerous consequences. Families preparing to stay behind may feel isolated if they aren't encouraged to interact with others. This feeling of isolation could lead to trouble if families don't know where to turn if problems arise and don't use all the installation's available resources and activities. Families experience many stressors at this time, and leaders should work to identify potential problems.

An unfortunate reality is that many Army units only begin to set up their FRGs during this phase of the ARFORGEN cycle. The unit training calendar and operations tempo make it difficult to assign a high priority to family readiness. Commanders are juggling packing and shipping equipment, maximizing time off by granting leave and passes, and closing the training gaps identified in after action reports following the MRE. In addition, many families may feel overwhelmed and less willing to volunteer than in other phases of the ARFORGEN cycle.

Mission at Home

Once the unit is deployed, the job of the FRG and rear detachment element is just beginning. During this time, the FRG will also go through multiple cycles of departure, adoption of new routines, rest and rehabilitation leave, then welcome home. Rear detachment leaders will be responsible for all of the FRGs while the unit is gone. It is their responsibility to ensure that the families are cared for, which is no simple task during this stressful time. Planning monthly battalion- or brigade-level events; presenting a strong, visible presence by the rear detachment commander; and coordinating available resources are critical to the success of the FRGs at this time.

Another key component is preparation for redeployment. A spouse resilience training event should be scheduled approximately 30 days before a redeployment. Successful resilience training will take many things into consideration: the mission of the deployed unit; composition of the families; the physical and mental effects of the deployment on both Soldier and spouse; and general “housekeeping” information. This is a great opportunity to give the families official redeployment information about topics such as passes and block leave. Rear detachment cadre members should work with all available agencies to tailor the event to the units' specific needs.

By keeping families involved in the ARFORGEN cycle, units will help the Army fulfill its promise to take care of its Soldiers and their families. When simple steps like the ones described in this article are taken by leaders at all levels of the chain of command, units are set up for successful deployments downrange and redeployments at home. 

Captain Moore is Commander, Delta Company, 1st Engineer Battalion, Fort Riley, Kansas. He was commissioned in 2006 as an engineer officer and was the Distinguished Military Graduate of the Reserve Officer Training Corps at Marquette University, Milwaukee, Wisconsin.

Mrs. Koelder, an Army spouse, is the FRSA for 1st Engineer Battalion. Previous experience includes employment as a program coordinator for Army Community Service at the National Training Center and various FRG volunteer positions at Fort Irwin and Fort Riley.

Note: The authors would like to thank Captain Matthew Todd and First Sergeant Anthony R. Valdez, B Troop, 5th Squadron, 4th Cavalry Regiment, for their input during the writing of this article.



USACE Takes Steps to Maintain Its Legacy in Iraq

By Mr. Vincent L. Marsh and Mr. Michael P. Scheck

The United States Army Corps of Engineers (USACE) is passing on to the Iraqi people a legacy ensuring that the reconstruction effort continues under the supervision of highly qualified Iraqi engineers. The Gulf Region District (GRD) engineers are passing on more than just engineering techniques to their Iraqi counterparts, according to the GRD commander, who has acknowledged the reconstruction effort as comprehensive—fostering legitimacy, building capacity across institutions, promoting reconciliation, and enforcing reasonable quality and schedule construction standards. In thousands of projects, GRD imparted acceptable construction, design, and job site safety practices to Iraqi engineers.

An Enduring Presence

The U.S. forces in Iraq prepared for Operation New Dawn for some time as Soldiers began to redeploy, leaving only 50,000 troops in-theater by early fall 2010 and none there after 2011. As a result, USACE reviewed a number of contingencies for that end state. However, as all engineers know, time is a relative term when dealing with construction projects. The USACE GRD is the enduring Corps presence in Iraq, having been scaled back from a division and three districts during the past year. The district is currently working on options to deal with project completion tasks that will linger past the USACE end state in Iraq. One option USACE has been aggressively promoting is the hiring and training of local Iraqi engineers and support personnel.

The goal of the Iraqi associate hiring initiative, according to the GRD commander, is for Iraqi engineers to garner that engineering knowledge and pass it on to their counterparts in both the government and the private construction field. As Iraqis take control of restoring their infrastructure, the training and mentoring by GRD has yielded “phenomenal” results in such areas as technical knowledge, project management, and maintenance and operation of facilities.

Mission and Program Purpose

The USACE mission in Iraq is to help rebuild the infrastructure and improve the daily lives of the citizens.

Early on, USACE identified the need to use local national experts in engineering, safety, and construction quality assurance to help in this mission. Identifying the needs and specific skill sets for a locally hired workforce was the first step taken in a long, complex process. The next challenging step was to develop a robust local national capability that could both understand and enforce the International Building Code (IBC).

The purpose of the Iraqi Associate Program, according to the Program Management Plan, is to “develop the capacity of professional Iraqi engineers to independently perform construction management, engineering, and quality assurance functions.” The end result of the program will increase the institutional capacity of the Iraqi engineer field and aid in the development of the economy by allowing the Iraqi engineers to continue the reconstruction efforts initiated by their U.S. counterparts, according to the plan.

Bridging the Gap

Approximately 90 percent of the USACE projects are located in local communities far from U.S. military installations. These projects require engineers proficient in Arabic, engineering, and construction techniques to monitor their progress. These high-tech skills are currently in high demand and of limited supply in Iraq.



An Iraqi associate engineer acts as a liaison between the Gulf Region District commander and a contractor in Mosul, Iraq.

In order to ensure proper construction, USACE embarked on a mission to develop the technical capability of the Iraqi people that would enable them to interpret U.S. federal contracts and build projects to the IBC standard. This was accomplished by awarding a personal services contract that enabled USACE to bridge the gap that existed between effective contract oversight and insufficient oversight resources.

The personal services contract allowed USACE to obtain the Arabic-speaking professional engineers needed to execute its mission. This contract currently employs approximately 233 personnel who provide a broad range of skills ranging from administrative assistants, engineers, real estate specialists, senior media analysts, construction inspectors, and photojournalists. These professionals are embedded with USACE employees and learn the subtleties of the USACE mission and Project Management Business Process (PMBP) and the proper enforcement of contract terms, conditions, and specifications to build a high-quality project—on time and safely. In addition, Iraqi associates are relied on to interface with the local community, explain the project, and relay the community's concerns to USACE. This results in establishing the professionally capable workforce that builds a high-quality project and meets the needs of the Iraqi people.

Iraqi Associates

The \$10 million Iraqi Associate Program is funded through the United States State Department Economic Support Fund. The capacity development program also includes an Iraqi engineer enhancement program that affords engineers—from the various ministries, university faculties, and small businesses—three- to six-month fellowships in public-, academic-, and private-sector engineering environments in the United States. To sustain the Iraqi associate partnership, the State Department has provided \$45 million from the Economic Support Fund to select Iraqi academic institutions to develop curriculum and training to meet provincial government of Iraq requirements. The training program for USACE Iraqi associates includes one month of formal training, an internship, a qualification transition—where candidates convert from an Iraqi associate-funded position to a project-funded position—and follow-up continuing education workshops and webinars.

These Iraqi associates provide a vital link in the USACE construction network. At the GRD Southern Area Office, a large team of Iraqi engineers, serving side by side with USACE employees, have performed extraordinarily in all construction aspects, and their expertise and abilities have been instrumental in the successful completion of area projects. Out of nearly two dozen Iraqi engineers currently employed in the resident office, three of them work as project engineers and carry through projects with little or no supervision from U.S. engineers. Training is primarily on the job, working side by side with a project engineer—and as they learn, trainees are slowly moved up in responsibility.

Other Iraqi associates work as quality assurance (QA) representatives in the field—preparing daily reports, monitoring safety, reviewing design drawings, and ensuring that quality is maintained at the project site; the standout QA representatives are often groomed for project engineer positions. All associates attend the safety office training and are constantly reminded of the importance of safety at the job site. Other classes have included ethics training and construction management practices. The only drawback is that the best associates leave the associate program and go to the United States.

The GRD resident offices in the south have been taking the lead in hiring, training, and integrating Iraqi associates. One officer sees the key to a successful program as focusing on education and training and hires only engineering-degreed candidates, who begin early on both formal and informal training and are able to attain QA certificates of training and the Occupational Safety and Health Administration (OSHA) safety officer certification. Online training and websites (such as <www.construction-knowledge.net>) help familiarize associates with U.S. construction techniques.

At the outset, offices in the south recognized the importance of the Iraqi Associate Program—and as the project load got smaller, the offices began to rely more heavily on the Iraqi associates to get to job sites that are too far or take too long for U.S. personnel to visit. As projects are completed and the work force scaled back, there has been much success in placing well-qualified Iraqi engineers in other positions due to the demand for their exceptional project management skills.

Partnership and Legacy

USACE has completed thousands of reconstruction projects in Iraq in partnership with the United States government and the government of Iraq. Since 2004, USACE has completed 5,257 projects throughout Iraq, valued at more than \$9.1 billion, and has more than 250 projects ongoing. The overall reconstruction effort in Iraq currently provides jobs for more than 20,000 Iraqis. USACE recognizes that its projects are in good hands under the management of the Iraqi associates. A legacy of improved safety and QA methods will be left in Iraq, and the sheer volume of projects has developed a pool of qualified contractors and inspectors who have seen what a difference a well-executed QA program can make.



Mr. Marsh is the Regional Chief of Contracting for the Great Lakes and Ohio River Division of USACE. He was previously assigned as USACE Regional Chief of Contracting—Iraq and USACE GRD Chief of Contracting. He holds a bachelor's in management from the University of Maryland and is certified in contracting (Level 3) and program management (Level 1) by the Defense Acquisition University.

Mr. Scheck works for the United States Army Corps of Engineers Gulf Region District's public affairs office.

Robotic Systems Joint Project Office-Fort Leonard Wood

By Second Lieutenant Wayland Lau and Mr. Joseph Stevens

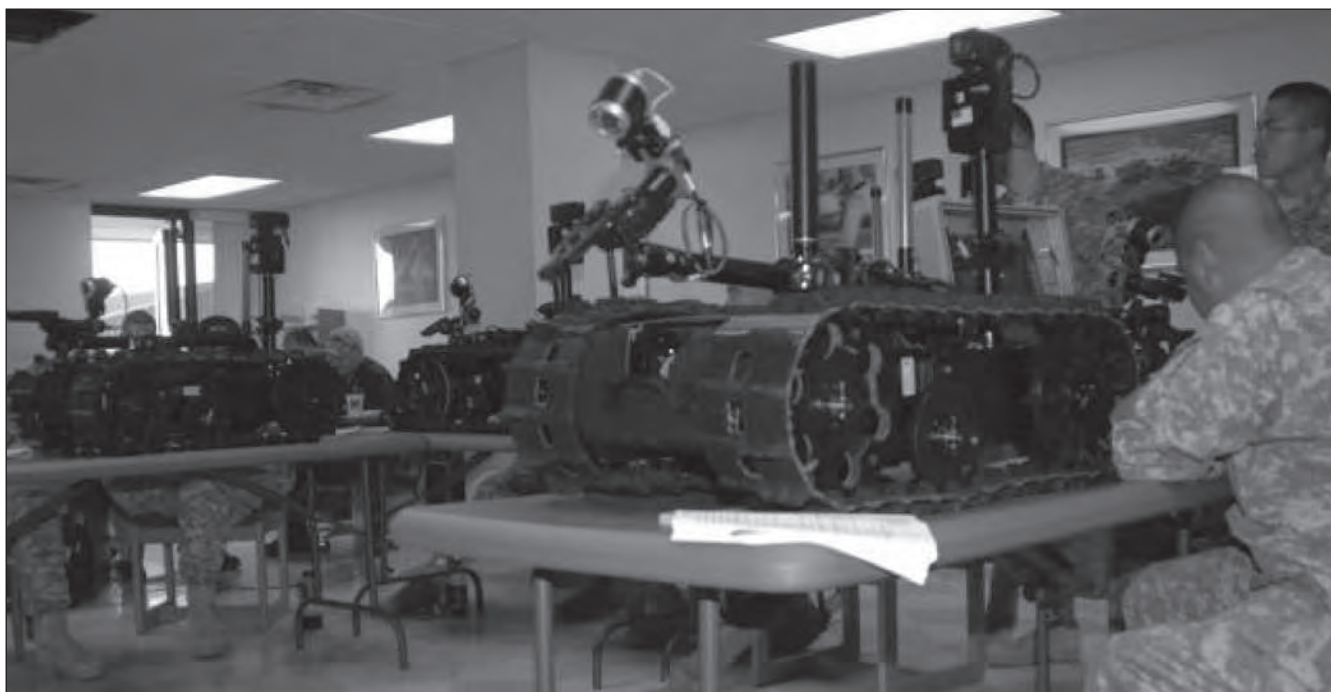
The current operational environment has produced a number of innovative tactical enablers to support the Warfighter. One of the greatest success stories in this area of the current-day fight is the adaptation and fielding of commercial robotic systems to meet the operational needs and objectives of land forces. A result of this activity is a family of mission-specific robotic tools for combat engineers.

Background

Headquartered in Warren, Michigan, the Robotic Systems Joint Project Office (RSJPO) is the materiel solution provider for United States Army and Marine Corps unmanned ground vehicle (UGV) needs. The office began in 1988 when the Department of Defense, Army, and Marine Corps facilitated an initiative to combine their development efforts of UGVs. Initial acquisitions

were used by explosive ordnance disposal (EOD) personnel to assist in the investigation and neutralization of improvised explosive device (IED) threats. Due to non-EOD mission shortfalls, additional robotic requirements were developed, including the capability to support combat engineers during route and area clearance missions.

Since its inception, RSJPO has developed—and maintains—working relationships with all Army and Marine Corps laboratories, the other uniformed Services, and various agencies. The current Fort Leonard Wood (FLW) office was established in July 2007 as part of an organizational restructuring of RSJPO to better align itself within its three functional development areas: maneuver, maneuver support, and sustainment. Assistant project managers (APMs) provide cost, schedule, and performance management support to the PM in each of these areas.



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Mission, Training, and Operations

The RSJPO FLW mission includes, but is not limited to—

- Conducting all operational assessments on new engineer robotic systems and payloads.
- Managing all joint engineer program-of-record (POR) systems.
- Conducting contingency and new POR system operator training.
- Supporting doctrine and tactics training development by the United States Army Maneuver Support Center of Excellence (MSCoE) Capabilities Development Integration Directorate. Maneuver support encompasses three schools: Chemical, Biological, Radiological, and Nuclear (CBRN); Engineer; and Military Police.

To meet these mission requirements, RSJPO FLW is organized into a headquarters element, two robot training divisions, and a joint robotic repair detachment (JRRD). The staff—which conducts training, maintains specialized robotics and equipment, and provides logistic support to domestic and deployed units—consists of an acquisition logistics training lead, four instructors, two robot technicians, and one supply technician.

RSJPO FLW conducts operator certification courses on all robotic systems currently fielded and intended for use by maneuver support elements. This includes both small robots and the Antipersonnel Mine Clearing System, Remote Control: M160 (MV-4B POR designation). Small robot operator courses are two days long and are conducted both at Fort Leonard Wood and at unit home stations through mobile training teams. The M160 operator course is five days long and only conducted at Fort Leonard Wood. Instructors also provide familiarization training on these systems as an embedded element of select Counter Explosive Hazards Center (CEHC) curriculums and the Engineer Warrant Officer Basic and Advanced Courses. The current

training venue will likely expand in the near term as new robotic platforms become available that are designed to provide dismounted forces with the capability to perform hazardous close-quarter reconnaissance and counter-IED operations. This is all in addition to providing robotic system platforms to support Fort Leonard Wood unit training exercises and special events—such as the Best Sapper Competition and Humanitarian Demining Center demonstrations.

JRRD serves as a “one-stop shop” for UGV logistic, maintenance, and other technical support services at Fort Leonard Wood. It repairs all RSJPO FLW and CEHC robotic systems and provides maintenance support for the Explosive Ordnance Clearance Agent Course. To meet this sustainment need, JRRD maintains a 90-day parts supply inventory on all supported robotic systems.

As a POR system, the M160 is completely managed by RSJPO FLW. Currently, this includes coordinating scheduled upgrades for initial-purchase systems and the intertheater movement of all deployed systems and providing full logistic support for in-theater systems by supplying joint sustainment facilities with repair parts. RSJPO FLW instructors and JRRD personnel also provide maintenance training on the M160 to robot technicians deploying to sustainment facilities in both existing theaters of operation. Once the M160 program reaches milestone C (full production) decision, the RSJPO FLW team will be responsible for fielding these systems to engineer clearance companies by providing new equipment training teams.

Summary

UGVs have proven their ability to contribute to combat operations in both Iraq and Afghanistan, with the exponential benefit of reduced risk for land forces. As robotic technology advances, RSJPO FLW is strategically positioned at the tip of the spear to meet the fielding and sustainment needs of the Engineer Warfighter.

For further information, contact RSJPO FLW at (Commercial) 573-596-0845 or (DSN) 581-0845. 

Second Lieutenant Lau is an Engineer Basic Officer Leadership Course (EBOLC) student who was attached to RSJPO, Fort Leonard Wood, Missouri, prior to starting class.

Mr. Stevens is a retired combat engineer and instructor at RSJPO, Fort Leonard Wood, Missouri.

ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center of Excellence Capabilities Development and Integration Directorate Concepts, Organizations, and Doctrine Development Division Doctrine Branch, Engineer Division

Publication Number	Title	Date	Description (and Current Status)
Newly Published Publications			
FM 3-34.5 (*FM 3-100.4)	<i>Environmental Considerations</i>	Pending 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. Status: Published 16 February 2010. Obtain from the Army Publishing Directorate or the Reimer Digital Library.
Publications Currently Under Revision			
FM 3-34	<i>Engineer Operations</i>	Apr 09	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. Status: Revising manual to incorporate the engineer lines of support framework. Estimated publishing date is 2QFY11.
Organizational Manuals			
ATTP 3-34.23 (*FM 5-116) (*FM 5-100-15) (*FM 5-71-100)	<i>Engineer Operations —Echelons Above Brigade Combat Team</i>	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 brigade combat teams (BCTs) (division, corps, and theater). 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. Status: Final approved draft is at the Army Publishing Directorate. Estimated publishing date is 1QFY11.
Combat Engineering			
FM 3-90.4 (*FM 3-34.2) (*FM 3-90.12)	<i>Combined Arms Mobility Operations</i>	Aug 00	This is a full revision, to include the renaming and renumbering of FM 3-34.2, <i>Combined Arms Breaching Operations</i> . Changes in the force structure have required adjustment of the tactics, techniques, and procedures (TTP) associated with breaching and clearance operations. The Marine Corps is dual-designated on this manual, which will replace their Marine Corps Warfighting Publication (MCWP) 3-19.3, <i>Marine Air-Ground Task Force (MAGTF) Breaching Operations</i> . Status: To be published 2QFY11.
General Engineering			
TM 3-34.48 1/2 (*FM 5-430-00-1 & 5-430-00-2)	<i>Design of Theater of Operations Roads, Airfields, and Helipads</i>	Pending 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 Air Force (as well as the Navy and Marine Corps) plans to adopt the new manual also. Status: Estimated publishing date is 2QFY11.
TM 3-34.41	<i>Construction Planning and Estimating</i>	NEW	This new manual is being produced by the Navy, in coordination with the Army and Air Force. The manual will provide the TTP and planning factors for conducting construction planning at the crew leader level. The manual will also provide useful expeditionary construction planning factors for use by planners at all levels. Status: Estimated publishing date is 3QFY11.

ENGINEER DOCTRINE UPDATE

U.S. Army Maneuver Support Center of Excellence Capabilities Development and Integration Directorate Concepts, Organizations, and Doctrine Development Division Doctrine Branch, Engineer Division

Publication Number	Title	Date	Description (and Current Status)
General Engineering (continued)			
TM 3-34.43 (*FM 3-34.451) (*FM 5-472)	<i>Materials Testing</i>	Pending 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. The Marine Corps and Air Force plan to adopt this manual as well. Status: Estimated publishing date is 2QFY11.
FM 3-34.65 1/2 (*FM 3-34.465)	<i>Quarry Operations</i>	Pending Mar 05	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. This is a collaborative effort with the Navy and Air Force and includes the newest technologies and current practices. There will be a focused staffing only for this manual. Status: Preparing Volume II. Initial Draft staffing of both volumes 2QFY11.
TM 3-34.49 (*FM 5-484)	<i>Multi-Service Well Drilling Operations</i>	Pending 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. This collaborative effort with the Navy, Air Force, and Marine Corps includes the newest technologies, current practices, and revised formulas. Status: Estimated publishing date is 2QFY11.
TM 3-34.56	<i>Waste Management</i>	NEW	This manual addresses issues not currently integrated into FM 3-34.5, <i>Environmental Considerations</i> . The manual will address the role of waste management in support of deployed forces, as well as the integration of waste management throughout the operations process, including its critical linkage to the composite risk management process. Status: Estimated publishing date is 2QFY11.
Geospatial Engineering			
ATTP 3-34.80 (*FM 3-34.230)	<i>Geospatial Engineering</i>	Pending 3 Aug 00	This full revision of FM 3-34.230, <i>Topographic Operations</i> , will incorporate changes as a result of FM 3-34, <i>Engineer Operations</i> , and FM 3-0, <i>Operations</i> . Geospatial engineering consists of engineer capabilities and activities that contribute to a clear understanding of the physical environment by providing geospatial information and service to commanders and staffs. Status: Final approved draft is at the Army Publishing Directorate. Estimated publishing date is 1QFY11.
NOTES: Current engineer publications can be accessed and downloaded in electronic format from the Reimer Digital Library at http://www.adtdl.army.mil or the MSKN Web site at https://www.us.army.mil/suite/page/500629. The manuals discussed in this article are currently under development and/or recently published. Drafts may be obtained during the staffing process or by contacting the Engineer Doctrine Branch at commercial 573-563-0003, DSN 676-0003, or douglas.merrill@us.army.mil or contact commercial 573-563-2717, DSN 676-2717, or brian.davis6@us.army.mil. The development status of these manuals was current as of 29 July 2010. *Publications shown inside parenthesis with an asterisk beside the number indicate the current published number, but that number will be superseded by the new number at the beginning of the listing. Multiple manuals in parenthesis will indicate consolidation into one manual. Due to the doctrine reengineering effort, some field manuals are being realigned as general subject technical manuals (TMs). These manuals will be numbered as TMs. Field manuals (FMs) dealing with Army tactics, techniques, and procedures (ATTP) will be renumbered as ATTPs.			

92d Birthday of the Army Warrant Officer



By Chief Warrant Officer Five David P. Welsh (Retired)

The United States Army Warrant Officer Corps marked its 92d anniversary on 9 July 2010. An Act of the United States Congress in 1918 established the United States Army Mine Planter Service as part of the United States Army Coast Artillery Corps. Implementation of the Act by the Army was published in War Department Bulletin 43, dated 22 July 1918. A total of 40 warrant officers were authorized to serve as masters, mates, chief engineers, and assistant engineers on each mine-planting vessel. Although only one rank of warrant officer was authorized by Congress, in effect, three grades were created because of the varying levels of pay authorized for masters, first mates, second mates, and corresponding levels of marine engineer personnel. This is also when the official color of the Army Warrant Officer Corps came to be brown. It originated from the brown strands from burlap bags that the Army Mine Planter Service personnel wore as their insignia of rank.

Also in 1918, the Army opened a school, commanded by an officer who had graduated from the United States Naval Academy, to train its mariners at Fort Monroe, Virginia. In World War I, the Coast Artillery Corps was responsible for mine defenses in major ports. Vessels ranging in size from small motor boats to 1,000-ton oceangoing ships were used to lay and maintain minefields. Conflicts between Soldiers and civilian employees who manned these vessels revealed the need to ensure that the vessels were manned by military personnel.

The following selected highlights portray the rich history of the Army Warrant Officer Corps:

- The National Defense Act of 1920 provided for warrant officers to serve in clerical, administrative, and bandleader positions. This act also authorized 1,120 warrant officers to be on active duty. During this time, warrant officers were excluded from performing duties from which enlisted personnel were also excluded.
- On 12 May 1921, a distinctive insignia was approved for warrant officers. It consisted of an eagle rising with

wings displayed, adapted from the Great Seal of the United States. The eagle is standing on two arrows, which symbolize the military arts and sciences. The eagle rising is enclosed within a wreath. Warrant officers of the United States Tank Corps were the first to wear this new insignia.

- In 1936, the Army was uncertain about what an Army warrant officer was and whether there was a place for warrant officers in the Army's personnel structure. Although it had given the rank to such specialties as band leaders, marine engineers, field clerks, and pay clerks, it had also used the rank as a reward for former commissioned officers who no longer met the officer educational requirements and for outstanding enlisted personnel who were too old to be commissioned and could look to no further advancement.
- In 1940, warrant officers began serving as disbursing agents. Warrant officer appointments began to occur in larger numbers for the first time since 1922. However, overall strength declined due to the significant number transferred to active duty as regular commissioned officers.
- In 1941, Public Law 230 authorized appointments of up to one percent of the total Regular Army enlisted strength. This law also established two pay grades for warrant officers—W1 for warrant officers junior grade and W2 for chief warrant officers. One other benefit of Public Law 230 was the authorization of flight pay for those involved in aerial duties.
- In November 1942, the position of warrant officer was defined by the United States War Department in the rank order as being above all enlisted personnel and immediately below all commissioned officers. January 1944 saw the authorization of the appointment of women as warrant officers, and by the end of World War II, 42 female warrant officers were serving on active duty. Warrant officers were filling 40 different occupational specialties by early 1946 and approximately 60 specialties by 1951.

- The 1949 Career Compensation Act brought two new pay rates for warrant officers. The designations of warrant officer junior grade and chief warrant officer were retained, and the grade of chief warrant officer was expanded with the addition of pay grades of W3 and W4.
- In 1953, the Warrant Officer Flight Program led to the training of thousands who later became helicopter pilots during the Vietnam War.
- The 1954 Warrant Officer Personnel Act established warrant officer pay grades W1 through W4 and officially eliminated the Mine Planter Service.
- On 21 January 1957, a new warrant officer concept, resulting from a Department of the Army study, was announced and provided the following guidelines:
 - There was a need for warrant officers.
 - The warrant officer category would not be considered a reward or incentive.
 - The first published definition for warrant officers was established in Army Regulation 611-112: "The warrant officer is a highly skilled technician who is provided to fill those positions above the enlisted level which are too specialized in scope to permit effective development and continued utilization of broadly trained, branch-qualified commissioned officers."
- In July 1972, Army warrant officers began wearing newly designed silver rank insignia with black squares, in which one black square signified warrant officer one (WO1) and two, three, and four black squares signified chief warrant officer two (CW2) through chief warrant officer four (CW4). Also in 1972, a trilevel education system was established and provided formal training at the basic or entry level for warrant officers in 59 occupational specialties. The educational system further provided intermediate level formal training in 53 specialties and formal training for 27 specialties at the advanced level.
- In 1978, United States Army National Guard and United States Army Reserve warrant officers were integrated into the Army Professional Development System. This satisfied the need for qualified, highly trained warrant officers that could be accessed for the Active Army rapidly in times of emergency.
- In 1982, the Warrant Officer Training System was established by the United States Army Training and Doctrine Command. The training system consisted of three levels: *Entry*, *Advanced*, and *Senior*.
- On 1 October 1984, all direct appointments of Army warrant officers ceased by direction of the Army Vice Chief of Staff. A Warrant Officer Entry Course was established at Fort Sill, Oklahoma. In the mid-1980s, a Warrant Officer Entry Course-Reserve Components was established in the Warrant Officer Training Branch at the Army Reserve Readiness Training Center at Fort McCoy, Wisconsin. This course evolved into Warrant Officer Candidate School-Reserve Components and was conducted until September 1994, when all warrant officer candidate school courses were consolidated and transferred to the Warrant Officer Career Center, Fort Rucker, Alabama.
- In 1985, the Army developed a new definition of the warrant officer that encompassed all warrant officer specialties: "An officer appointed by warrant by the Secretary of the Army, based upon a sound level of technical and tactical competence. The warrant officer is the highly specialized expert and trainer who, by gaining progressive levels of expertise and leadership, operates, maintains, administers, and manages the Army's equipment, support activities, or technical systems for an entire career."
- The National Defense Authorization Act (NDAA) for Fiscal Year 1986 amended Title 10 of the United States Code (USC) to provide that "Army chief warrant officers shall be appointed by commission." The primary purpose of the legislation was to equalize appointment procedures among the services. Chief warrant officers of the United States Navy, United States Marine Corps, and United States Coast Guard had been commissioned for many years. Contrary to popular belief, the commissioning legislation was not a Total Warrant Officer Study recommendation but a separate Army proposal. Further clarification of the role of an Army warrant officer, including the commissioned aspect, was found in Army Field Manual 22-100: "Warrant officers are highly specialized, single-track specialty officers who receive their authority from the Secretary of the Army upon their initial appointment. However, Title 10 USC authorizes the commissioning of warrant officers upon promotion to chief warrant officer rank. These commissioned warrant officers are direct representatives of the president of the United States. They derive their authority from the same source as commissioned officers but remain specialists, in contrast to commissioned officers, who are generalists. Warrant officers can and do command detachments, units, activities, and vessels, as well as lead, coach, train, and counsel subordinates. As leaders and technical experts, they provide valuable skills, guidance, and expertise to commanders and organizations in their particular field."
- In 1988, the Army established that—pending submission and approval of the new rank of CW5—warrant officers selected by a Department of the Army board and designated as master warrant officer (MW4) would be senior to all warrant officers in the rank of CW4. The MW4 continued to be paid at the W4 pay grade. In December 1988, the first class from the MW4 training course graduated and the first 30 CW4s were designated as master warrant officers.
- In 1989, a Warrant Officer Management Act (WOMA) proposal was submitted by the United States Army Warrant Officers Association on behalf of the Army to the Congress. In 1991, the WOMA proposal was considered by the Congress, and it was incorporated into the NDAA for Fiscal Year 1992. Six key provisions were

enacted based on WOMA as signed by the President in December 1991:

- A single promotion system for warrant officers.
- Tenure requirements based on years of warrant officer service.
- Establishment of the rank of CW5 with a five-percent cap on the number of warrant officers on each Service's active duty list at any one time.
- Selective mandatory retirement boards for retirement-eligible warrant officers.
- In February 1992, WOMA's provisions went into effect. On 1 October 1992, the appointment of Army warrant officer candidates to WO1 was established as the graduation date from Warrant Officer Candidate School. Prior to that date, candidates were not appointed until completion of the then Warrant Officer Technical and Tactical Certification Course for their military occupation specialty (MOS). Since certification courses for various MOSs were of various lengths, the length of time spent as a warrant officer candidate varied greatly.
- On 9 July 2004, new CW5 rank insignia and standards for wearing Army officer branch insignia and branch colors were announced as uniform changes for Army warrant officers. The CW5 insignia was a silver-colored bar, 3/8 inch wide and 1 1/8 inches long, with a black line down the center of the bar. This aligned the Army CW5 insignia with those of the Navy and Marine Corps, making the rank more readily recognizable in joint operations. Ceremonial warrant officer insignia change and flag ceremonies were held at various locations on 9 July and other dates. This change relegated the brass "eagle rising" insignia to Warrant Officer Corps history.
- On 14 October 2005, new Army warrant officer definitions were published in Department of the Army Pamphlet 600-3, *Commissioned Officer Professional Development and Career Management*. This pamphlet, which includes the career development of warrant officers, contains the new official definition of an Army warrant officer: "The Army warrant officer (WO) is a self-aware and adaptive technical expert, combat leader, trainer, and advisor. Through progressive levels of expertise in assignments, training, and education, the WO administers, manages, maintains, operates, and integrates Army systems and equipment across the full spectrum of Army operations. Warrant officers are innovative integrators of emerging technologies, dynamic teachers, confident warfighters, and developers of specialized teams of Soldiers. They support a wide range of Army missions throughout their career. Warrant officers in the Army are accessed with specific levels of technical ability. They refine their technical expertise and develop their leadership and management skills through tiered progressive assignment and education."

Department of the Army Pamphlet 600-3 follows these general definitions with additional definitions for each warrant officer rank, WO1 through CW5.

- On 11 January 2008, the Assistant Secretary of the Army for Manpower and Reserve Affairs issued a memorandum authorizing 30 years of active service for all Regular Army warrant officers of any grade. Previously, only Regular Army CW5s were allowed 30 years of active warrant officer service.
- On 26 April 2010, the NDAA for Fiscal Year 2011 was introduced in the United States House of Representatives. Section 507 of the bill amended Section 571(b) of Title 10 USC, to provide that appointments in the rank of regular warrant officer—WO1—be made by the regulation issued by the secretary of the military department and that these appointments shall be made by the President, except that appointments in that grade in the Coast Guard shall be made by the secretary concerned. The bill was pending in Congress as of September 2010.
- As of 30 September 2010, the Army warrant officer cohort will be composed of about 24,550 men and women, as follows:
 - Active Army—62 percent
 - Army National Guard—32 percent
 - Army Reserve—12 percent (not counting members of the Individual Ready Reserve also available for mobilization)
 - Technical branch warrant officers—65.4 percent
 - Aviation warrant officers—34.6 percent
 - Percentage of the Army—2 percent
 - Percentage of the Officer Corps—14 percent
 - Branches with warrant officers assigned—17
 - Number of warrant officer MOSs—approximately 70

The above information is extracted from the online warrant officer history maintained and frequently updated by the nonprofit Warrant Officers Heritage Foundation. A more detailed history can be found on the foundation's website at <www.usawoa.org/WOHERITAGE>. Click on "Warrant Officer History." The online history contains many pictures, links to copies of original documents, and information about warrant officers with historical significance. 

Chief Warrant Officer Five Welsh (Retired) served in the United States Army Reserve and on active duty that culminated in his assignment as the Army Reserve warrant officer policy integrator in the Office of the Chief, Army Reserve, in the Pentagon. He retired from active duty in 1998 with 42 years of combined Reserve Component and Active Army service. He was National President of the United States Army Warrant Officers Association from 1988 to 1992 and was a member of its full-time staff from 1998 to 2003. He founded the Warrant Officers Heritage Foundation in 2003 and currently serves as president and member of the board of directors.

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