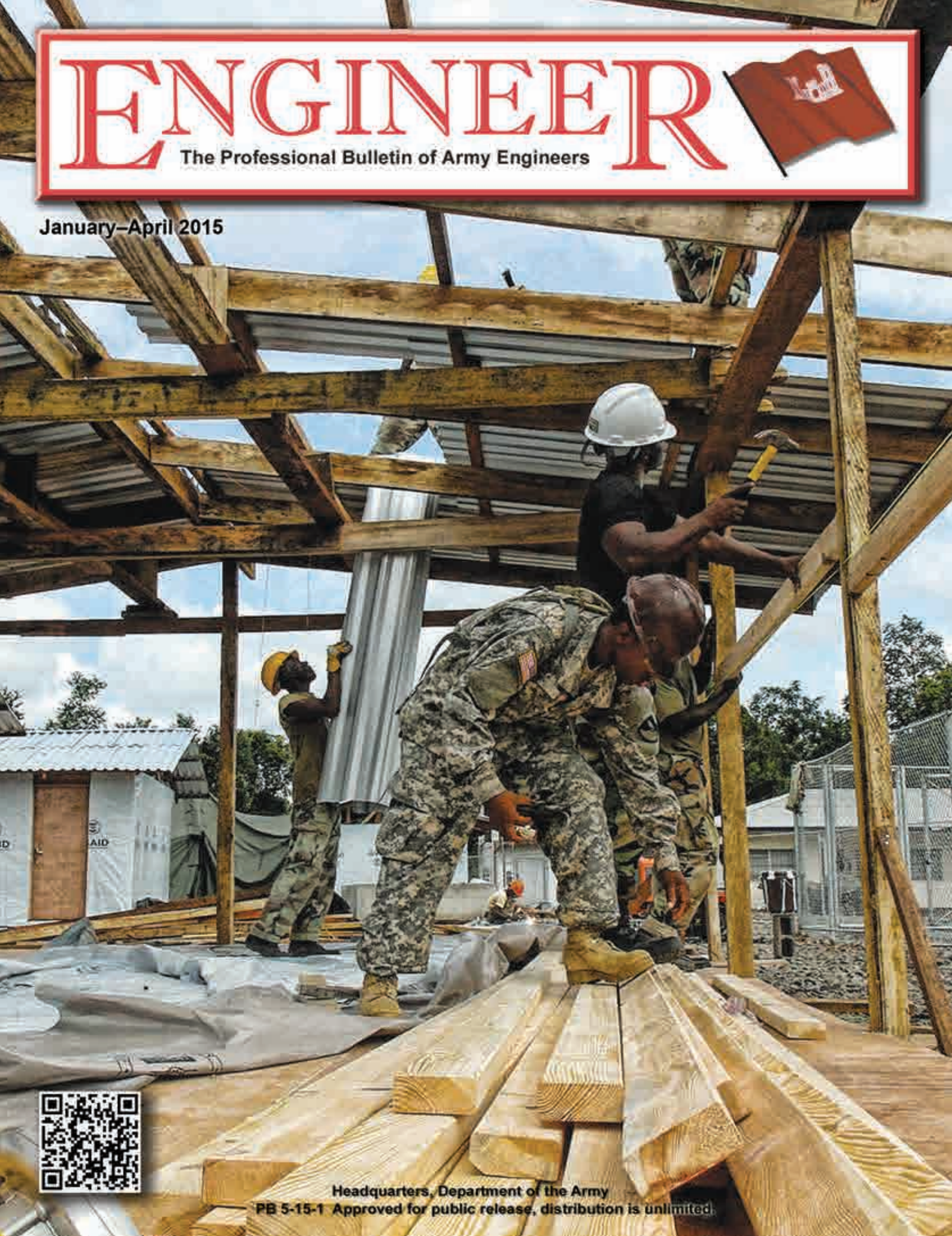
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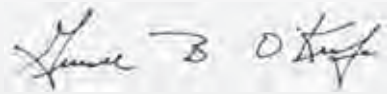
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Front cover: U.S. Army engineer Soldiers work with Liberian soldiers to construct an Ebola treatment unit site in Sinje, Liberia.

Back cover: U.S. Army photos

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Clear the Way

Brigadier General Anthony C. Funkhouser
Commandant, U.S. Army Engineer School



Greetings to the Engineer Regiment! As I thought about what to write for this issue, I concluded that I should cover an area of current importance—the new Army Operating Concept (AOC).[1] If you are an engineer Soldier, noncommissioned officer, or commissioned officer, you might ask, "Why does this matter to me? I am just trying to train my Soldiers for the next mission."

The answer is that it will affect the Engineer Regiment's doctrine, organizational structure, and equipment in the future. We can either shape it the way we think it should be or just let it happen. I will attempt to lay out in an abbreviated manner how it could affect Army engineers today and into the future.

The AOC is how we foresee the Army operating in the future. It is an intellectual framework to see how the Army will fight and how things will fit together. The last AOC that most of us are familiar with is AirLand Battle. This concept was developed for a known threat with known capabilities in a known region. It was developed to oppose the Soviet threat in Europe and "Fight Outnumbered and Win." We were able to definitively calculate the rate of fire against a foe that significantly outnumbered us, based on their formations and the topography. With a strategy of firing on the move, engaging multiple targets, and striking deep, we designed the Big 5 major systems:

- M1 Abrams tank.
- Bradley fighting vehicle.
- AH-64 Apache helicopter.
- UH-60 Blackhawk helicopter.
- MIM-104 Patriot missile.

We were a threat-based Army that was designed to fight the most dangerous enemy in echelon, from deep to near, due to the volume of symmetric forces. Combat engineers would provided countermobility capability deep in the enemy rear to disrupt and emplaced obstacles near (at two-thirds of our maximum effective range) to buy time to destroy oncoming vehicles in a target-rich environment. Engineers provided mobility for large, offensive maneuvering to flank the enemy by breaching through complex obstacle systems with plows, mine-clearing line charges, and armored combat earthmovers. We provided survivability positions for Soldiers and vehicles, developed map products, and performed invaluable terrain analysis to use the folds of the terrain to our advantage. We effectively used this doctrine in Operation Desert Storm and, more recently, in Operation Iraqi Freedom I.

Today, we are looking at a more challenging and complex environment with increasing threats around the world, changing coalitions, and evolving technologies. We do not know specifically who, when, or where we will be expected to fight. Acknowledging these unknowns, the AOC mantra for the Army of 2025 and beyond is to "Win in a Complex World." We must transition from a requirements-based Army to a capabilities-based Army with a new Big 5 effort. These include—

- Optimizing Soldier and team performance.
- Developing adaptive, innovative leaders and institutions to understand and operate in complex environments.
- Ensuring interoperability.
- Building scalable and tailorable joint and combined arms formations.
- Leveraging concepts and technologies to maintain capability overmatch while speeding deployment and reducing logistical demand.

"One way we will seek to optimize our Soldier and team performance . . . is to increase our technical competencies across the force through credentialing and certifications."

At the U.S. Army Engineer School, we are determining how we will integrate into the AOC. One way we will seek to optimize our Soldier and team performance in the institution is to increase our technical competencies across the force through credentialing and certifications. The number of these opportunities is expanding daily, and our goal is to make it possible for Soldiers in all military occupational specialties to earn civilian equivalency certifications, credentials, and undergraduate degrees. Our commissioned officers will have increased opportunities for credentials and master's degrees. For details on this goal, visit <https://www.milsuite.mil/book/groups/engineer-credentialing-forum/overview>.

We are working to develop more adaptive and innovative leaders with increased developmental assignments to broaden their experiences and expose them to new ideas, which will allow them to consider a wider range of options and make better decisions. We are increasing opportunities for fellowships; positions in the Training With Industry Program; and developmental assignments at combat training centers, the U.S. Army Corps of Engineers, and special operations forces. Many of these opportunities are in the newly published Department of the Army Pamphlet 600-3, *Commissioned Officer Professional Development and Career Management*.

We are looking at increased opportunities to work with coalition allies to ensure interoperability and expanding the Route Reconnaissance and Clearance Course at the Counter Explosive Hazard Center to include international partners. We are opening up more short-term instructor exchanges with other international schoolhouses and looking at interagency exchanges. We recently added an instructor from the National Geospatial-Intelligence Agency to our team.

We continue to build on our joint and combined arms formations. We will complete the conversion to the brigade engineer battalions in the brigade combat team formation for Regular Army components in the next year and for the Army National Guard in the next 3 years. We are also redesigning our echelon-above-brigade units with a focus on making them more multifunctional to deal with the potential unknowns.

Finally, we are looking at a number of technologies to maintain overmatch. We are working to increase robotics capabilities, improve explosive hazard detection systems, replace mines with a new munition capability, and eventually replace the armored combat earthmover.

There is much more to the AOC and to our future plans for Army engineers. These are just a few thoughts to provoke discussion and feedback. I believe that the Army is on track to become a more flexible, professional, and proficient force—technically and tactically—over the coming years. We must do our part to ensure that we think through the challenges we face, that we develop an Engineer Regiment which continues to provide the maneuver commander with freedom of action throughout the entire range of military operations, and that we win in a complex world.

I look forward to your thoughts on the AOC and challenge you to write articles for *Engineer*. I also challenge you to discuss topics in forums such as the Engineer Regimental Resource Menu at <https://www.milsuite.mil/book/groups/usaes-commandant-resource-menu>. Such discussions will help us think through our future and help shape the Engineer Regiment.

Thanks for all you and your Families do every day. Essayons!

Reference:

Department of the Army Pamphlet 600-3, *Commissioned Officer Professional Development and Career Management*, 3 December 2014.

Endnote:

[1]U.S. Army Training and Doctrine Command Pamphlet 525-3-1, The *U.S. Army Operating Concept–Win in a Complex World 2020-2040*, 7 October 2014.



Lead the Way

Command Sergeant Major Butler J. Kendrick, Jr.
Regimental Command Sergeant Major



Greetings to Army engineers around the world. I hope you and your Families are ready for 2015. The year 2014 was full of adventure for the Engineer Regiment, and I'm sure that 2015 will bring different challenges—but, as always, we will lead the way.

A lot has happened since my last column, and I will begin by talking about the Regular Army standing up 22 of its projected 32 brigade engineer battalions (BEBs). The Army National Guard has also begun activation ceremonies and currently has 6 BEBs. BEB activations remain a top priority for the Engineer Regiment, so please let us know when ceremonies are planned so that we can support them with senior leader attendance.

Recently, I spent 5 days visiting engineers at the Interservice Training Review Organization advanced individual training (AIT) locations at Panama City, Florida; Gulfport, Mississippi; and Goodfellow and Sheppard Air Force Bases in Texas. First Sergeant Brett C. Boyer provided an overview of Army engineer diver capabilities and conducted a tour of the Naval Diving and Salvage Training Center at Panama City. The organization annually trains 1,800 students from five military services, other federal and state agencies, and allied nations in 21 courses. On a related note, our divers are scheduled to participate in Exercise Roguish Boy, an ice-diving event to take place in partnership with Canada. The next morning of my visit began at Gulfport with a vigorous physical fitness session of conditioning drills that included—

- High jumpers.
- Push-ups.
- Sit-ups.
- Side straddle hops.
- Knee benders.
- Stationary run.
- Supine bicycle.
- Cross-country skier.
- All-fours run.
- Mule kick.
- Flutter kick.
- Swimmer.
- The engine.

First Sergeant Eric B. Winn, Company C, 169th Engineer Battalion, briefed us on their AIT platoon sergeants and the carpentry and masonry specialists in training. We finished the day by inspecting the equipment used by AIT students and observing the joint relationship between the U.S. Navy, U.S. Air Force, and U.S. Army at Gulfport. At Goodfellow Air Force Base, Sergeant Major Tommy L. Love proudly showed us the Firefighter Detachment, 169th Engineer Battalion facilities, which are used to train Soldiers, Marines, Sailors, Airmen, Coast Guard personnel, Department of Defense civilians, and allied service members in firefighting skills. We also observed the detachment's unique AIT, fire protection apprentice, and advanced and senior leader courses. The trip to Sheppard Air Force Base would not have been complete without an 0400 physical training session with the plumber AIT students. First Sergeant Mark A. Cain, Company D, 169th Engineer Battalion, explained the capabilities and skills that plumbers must learn before being assigned to their first duty station.

I had the privilege of being the guest speaker for the Engineer Ball of the 224th Engineer Battalion, Iowa Army National Guard. It was a splendid evening spent with Soldiers, Families, and alumni. My driver, Sergeant Keven D. Cochran, also attended the event, which was the first time he had been to an Army ball. We would like to thank the team for putting on a great performance.

If you were not able to log on to view the third quarterly sergeant major/command sergeant major forum, I recommend that you visit <https://connectcol.dco.dod.mil/p6pety80czz/>. We had productive discussions about the current challenges and the future of the Engineer Regiment, with briefings from the U.S. Army Corps of Engineers, the NCO Academy, and the U.S. Army Engineer School.

The Engineer Regiment still needs more Soldiers in grades sergeant to sergeant first class to attend the Sapper Leader Course. (Waivers are available for specialists who serve as a combat engineer team leader.) And don't forget the Best Sapper competition scheduled for 19–24 April 2015. We hope to see your best teams come forward to take the trophy from last year's winners from Fort Bragg, North Carolina.

Thanks for your dedicated selfless service, professional engineers!

Show the Way

Chief Warrant Officer Five Scott R. Owens
Regimental Chief Warrant Officer



As I write this in December, I want to reflect on two key events conducted at the U.S. Army Engineer School in 2014: the Engineer School on-site conference in September and the Regimental Command Council in November. These events were crucial azimuth checks to ensure that we synchronize and prioritize the Engineer School's internal efforts for the coming year and inform key leaders across the Engineer Regiment. Even though the Regimental Command Council was conducted online due to Army conference restrictions, it was a productive event and engineer leaders across the world participated in the discussions. However, I noticed that warrant officers were conspicuously absent from the sessions. Given the increased roles and responsibilities that engineer warrant officers have in today's Army, it is critical that senior warrant officers be included in events such as this. Today's warrant officers are not only technical experts, but they are also key members of a commander's staff. They assist in planning operations, identifying resource requirements, guiding training, integrating and maintaining systems, advising commanders, and mentoring junior warrant officers.

With the Army drawdown and ongoing force structure changes, most engineer warrant officers have been moved out of platoons and into battalion headquarters and higher. This is a large challenge for newly appointed warrant officers one, especially for those assigned to a brigade engineer battalion (BEB). The BEB is structured with about 25 percent of its required capabilities, so it relies on other engineer assets to meet its mission. This means that a construction engineering technician warrant officer will work on the BEB staff to help plan missions, identify outside resources required, and advise where these resources could originate. An important new position for a geospatial engineering technician is in the engineer brigade, coordinating with corps and division geospatial intelligence cells and Army service component command (ASCC) geospatial planning cells to obtain and distribute the Standard and Shareable Geospatial Foundation to deployed units. Additionally, the officer in charge of the ASCC geospatial production cell and the senior geospatial engineering technician warrant officer should be fully integrated into the command staff planning and operations. This will enable them to better determine the geospatial data and products required to support the ASCC and develop relationships with vertical and horizontal regionally aligned forces that they must support with the Standard Shareable Geospatial Foundation. The geospatial planning cell and its warrant officers are key elements of the ASCC engineer team.

These are but a few examples of the increased roles and responsibilities of engineer warrant officers. To ensure that they are used most effectively, it is important to integrate these warrant officers into staff processes so that they understand the commander's intent, the unit's mission, and the unit's place in the overall picture. This will also enable them to develop relationships with their counterparts in regionally aligned forces across Army components. This is especially important since most engineer units are in the Reserve Components.

Warrant officers have often been called the quiet professionals due to their reputation as technical experts who do what it takes to get the job accomplished without fanfare or drama. However, quiet does not mean silent or invisible; so I ask commanders and staffs to challenge their warrant officers by fully integrating them into staff processes and to include them in the Regimental Command Council and other professional development venues. This will help them understand the greater picture, see how they fit into it, and learn how they can better support the mission.

I know that most warrant officers who read this article are already doing this. I encourage you to drive on with your missions, continue to develop yourselves, and inject yourselves into the staff process if you are not already included. In short, be engaged, be visible, and be vocal!

Until we meet again, stay safe; and don't forget to regularly check the latest discussions on the following warrant officer and Engineer Regiment resource sites:

- Engineer Senior Warrant Officer Group: <https://www.milsuite.mil/book/groups/senior-engineer-warrant-officer-group>.
- Engineer Junior Warrant Officer Group <https://www.milsuite.mil/book/groups/engineer-branch-junior-warrant-officer-group>.
- Engineer Warfighter Forum <https://www.milsuite.mil/book/groups/engineer-warfighter-forum>.
- Engineer Regiment's Resource Menu: <https://www.milsuite.mil/book/groups/usaes-commandant-resource-menu>.

For information about how to become an engineer warrant officer, log on to the U.S. Army Recruiting Command Web site at <http://www.usarec.army.mil/hq/warrant>.

TRIBAL KNOWLEDGE II:
Back to Basics

By Colonel Adam S. Roth

"Any time you have an opportunity to make a difference in this world and you don't, you are wasting your time on this earth."

—Roberto Clemente[1]

Many themes were discussed during the U.S. Army Reserve Council of Colonels, Warrant Officers, and Sergeants Major at the Devens Reserve Forces Training Area at Fort Devens, Massachusetts, in September 2014. Sitting among Soldiers who represented hundreds of years of military engineering experience, I realized that many of the skill sets that the leaders in attendance learned in their earlier years, grew up with in the Engineer Regiment, and practiced all the time were not being passed along to our junior leaders. The wars (and the modular unit mobilization along the Army force generation timeline) crowded out the time needed and made knowing these things virtually superfluous. Now there is a definite generation gap and a lack of the "tribal knowledge" that defined engineers as a separate and distinct tribe. The purpose of this article is to highlight some of the key areas of that tribal knowledge and provide a primer for leader development programs at camps, posts, and stations before the remaining tribal elders leave the stage. Some of this information may seem Reserve Component-centric, but if you want to learn about time management, watch how the Reserve Component packs everything necessary into a very compact time frame. This will be a two-part article that starts with general knowledge in this issue and discusses engineer-specific competencies in the next issue of *Engineer*.



Soldiers from the 3d Brigade Engineer Battalion participate in a field training exercise.

Training Management

This was an art practiced and imparted by the wizards who were known as training noncommissioned officers (NCOs). Many of us learned in our younger years how to take Soldiers, materiel, and a mission and program them to ensure that resourcing was available and locked in. There are many subsets of this critical job that require closer discussion:

Developing the Mission-Essential Task List. Transformation to modularity radically changed this job in 2006–2007 when companies became "AA" units—virtually plug-and-play entities that were separate and distinct from their parent battalions.[2] But taking a unit mission statement (formerly derived from the Army WARTRACE Program but now found on the unit modified table of organization and equipment) and breaking down specified, implied, and essential tasks into collective, leader, and Soldier level tasks has become a lost art.[3] What was once known as the Army Training and Evaluation Program mission training plan is now a Combined Arms Training Strategy manual. However, the principles are timeless. Developing a mission-essential task list should be the first order of business when taking command at any level. This is taught peripherally at the Engineer Basic



Soldiers dig a tank trench during a rotation at the National Training Center.

Officer Leader Course, but it is the responsibility of leaders to impart this key skill. This process explains why we are here and why we do what we do.

Developing the Yearly Training Calendar. This is where a commander has the proverbial 100 things to do, has time to do only 50 of them, and turns them into reality. Green-amber-red is still a viable methodology for scheduling drill dates and annual training. How many readers know how to do this and can digest the commander's training guidance and turn it into the reality of the yearly training calendar? Scheduling is everything when doing this. Depending on location, a leader will also need to know when deer hunting season starts, when home games for the Tennessee Volunteers are scheduled, or when the Bristol Race is happening. It's all about people, and the people have lives outside of the unit. If the two conflict, leaders may not get the expected turnout.

Creating Training Schedules. This has truly become a lost art; and with it, we lost the 6-week (or perhaps 90-day) lock-in that constituted a contract with the brigade commander. Questions that must be answered include—

- Do training schedules have the right references and identified hip pocket training tasks on them?
- Is scheduled training resourced?
- Have the classes been rehearsed?
- Are the instructors qualified?
- Do instructors need range certification?

In the past, much of this was done for mobilizing units by others; but now it is incumbent on the unit junior leader to make these things happen.

Conducting Training. Many would say that training has become an implied task, based on the masses of "administrivia" a commander must accomplish. Good commanders know how to fence time for training and give junior leaders the opportunity to conduct the training (with the appropriate reference materials) and to ensure that documentation is completed and an after action review is conducted. If a unit has a recruiting and retention problem, look at the training program. If training is not taking place, Soldiers will find challenges elsewhere.

Conducting Motor Stables. Has the unit entirely outsourced its maintenance and services to agencies such as an area maintenance support activity shop, or does the unit take the time to perform proper preventive maintenance care and service with the proper manuals and with the entire system? Are the mechanics online with the operators as they are finding and correcting faults so that the equipment never hits a deadline report? Do leaders take into account the entire system, checking not only the vehicle but also the radios? How often does nuclear, biological, and chemical protective gear get maintenance? Are weapons cleaned only immediately before and after the unit goes go to the range? Is there a fair and equitable system to ensure that those pesky unassigned weapons get cleaned? Is there a driver/operator training program that actually gets Soldiers licensed and proficient? Finally, are the names of the driver and vehicle commander on the windshield of the vehicle so that there is accountability and a sense of pride in each vehicle?

Understanding Load Planning. Back in the day, many leaders had to have detailed load plans for their vehicles. Had the balloon ever gone up in Germany in the late 1980s, our M-113 armored personnel carriers could barely contain our basic load for ammunition, let alone the A and B bags that were packed according to a tactical standard operating procedure. Today, the Army must cultivate an expeditionary mind-set. But how many units can pack all of their gear and move to a given location within a given time frame? Are we so reliant on third-party contractors that we have forgotten how to load out what's inside our vehicles (wheeled or tracked) for a rail movement? Do we have the blocking and bracing equipment, turnbuckles, come-alongs, and other binding equipment? If so, can we use it safely?

Performing Additional Duties. Every job description in the Army has an implied sentence that is rarely seen; it reads, "other duties as assigned." For junior officers, this implies additional duties that may seem innocuous but which

represent bona fide functions that must be accomplished at the company level. Are leaders setting up junior officers for success and empowering them to accomplish duties such as unit maintenance officer, physical security officer, or the more boutique functions such as tax assistance or unit voting officer? Do young officers know how to find the authoritative regulation or Department of the Army pamphlet and then turn it into a workable program that could pass a command or inspector general inspection? Are the senior leaders assuming risk on these growth opportunities, or have they been so busy fighting the wars that they have forgotten how to do these things? Battalion commanders are grown by performing these kind of tasks as young officers learn about the depth and breadth of what command is all about.



Soldiers with the 3d Engineer Battalion check the mine-clearing line charge launcher during an exercise at Fort Hood, Texas.

Passing the Torch. I made sure that every officer I commissioned in my battalion—whether from Officer Candidate School or by direct commission—got a copy of *Army Officer's Guide*. Because the amount of training time that Engineer Basic Officer Leader Course students receive is limited, many Army customs and courtesies are not imparted to newly commissioned officers. Do leaders pass along books like this (and perhaps *Reserve Forces Almanac*) to show new officers the kind of things they need to look at down the road? Do leaders inculcate in them the importance of the organizations that represent the interests of the Engineer Regiment, such as the Army Engineer Association, the Society of American Military Engineers, the Association of the United States Army, or the Reserve Officers Association? Leaders are the ones to engage young officers on these topics to propagate our species as Soldiers and as Army engineers.

Way Ahead

This is the second article in a series on tribal knowledge (see *Engineer*, Volume 44, May-August 2014).[4] I will write more about engineer-specific tribal knowledge in the May–August 2015 issue of *Engineer*. Consider this a challenge to the field. I have posited only a few of the many and various skills and abilities required to be a journeyman in the engineer profession. Apprenticeship in the profession would start when the Engineer Basic Officer Leader Course is completed, carry through assignments as platoon leader and executive officer, and culminate as successful completion in the crucible of company command. Consider using some of these thoughts as starting points for leader development programs, and consider writing articles for this publication about the many other tasks that are required in the profession.

In the spirit of the quote that began this article, I ask if we are wasting our time on this earth if we do nothing to share our tribal knowledge and propagate the species. As always, the author welcomes vociferous debate and can be reached at <adam.roth@us.army.mil>.

Endnotes:

[1]Baseball Almanac, "Roberto Clemente Quotes," <http://www.baseball-almanac.com/quotes/roberto_clemente_quotes.shtml>, accessed on 16 December 2014.

[2]An "AA" unit identification code is a unique identifier of a single organization in the Army that is used in documentation, readiness reporting, Army planning, and digital tracking.

[3]The Army WARTRACE Program aligns Regular Army and Reserve Component units under their wartime gaining commands as a way to improve planning, mission capability, and mobilization.

[4]Adam S. Roth, "Tribal Knowledge: What You Don't Know About Promotion Boards Can Hurt You," *Engineer*, Volume 44, May–August 2014, p. 6–8.

References:

Robert J. Dalessandro, *Army Officer's Guide*, Stackpole Books, Mechanicsburg, Pennsylvania, 8 December 2008.

Debra M. Gordon, *Reserve Forces Almanac*, Uniformed Services Almanac, Inc., Falls Church, Virginia, February 2010.

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Führen mit Auftrag:

Mission Command From a German Point of View

By Lieutenant-Colonel Jens Küster

Time and date: 0430, 10 May 1940.
Place: Cologne, Germany.
Objective: Fort Eben-Emael, Belgium.

Assault Group Granite, one of three assault groups led by First Lieutenant Rudolf Witzig and his airborne engineers, boarded nine glider aircraft. Their target was Fort Eben-Emael, Belgium, approximately 60 miles west. Their task—and the intent of the higher echelon—was to seize the fortress, which secured three vital bridges over the Meuse River and the Albert Canal. The action was a prerequisite to ensure the rapid advance of the Wehrmacht across the Meuse River, through Belgium, and into France.

A thoroughly planned attack was about to begin. The 493 German soldiers comprising the force had assembled 7 months earlier and begun a period of intensive training. A detailed study of the fort, the bridges, and the surroundings was made; and a replica of the area was constructed for training the airborne troops. Joint exercises between the parachutists and the glider pilots were carried out in the early spring of 1940, and a number of refinements were made to equipment and tactics.

Everything was set in the early morning hours in May 1940 when Clausewitzian friction began. Shortly after departure, the glider carrying First Lieutenant Witzig had to make an emergency landing in a field just outside Cologne. Immediately, Staff Sergeant Walter Meier assumed leadership, took decisive action by leading the force to the fortress, landed his glider on top of it, and successfully destroyed or disabled casemates and artillery pieces in time for First Lieutenant Witzig to join the fight hours later and destroy the primary targets. At 1230 the next day, the fortress surrendered. Sixty Belgian soldiers were killed, 40 were wounded, and more than 1,000 were taken captive. Assault Group Granite suffered six killed and 19 wounded.

This is just one historic example of *Auftragstaktik,* or "mission command," a leadership principle that German armed forces have practiced in an exemplary way for more than 200 years.[1] Interestingly, it took a long time for mission command to find its way into military doctrine. And it wasn't until 1953 that mission command was officially recognized as part of the even more complex concept of *Innere Führung,* or inner leadership, and incorporated into the newly developing Bundeswehr doctrine.[2] But obviously, German armed forces practiced a leadership principle before it was institutionalized and subsequently taught and trained.

Was there a forerunner model from which mission command derives? What is the German Bundeswehr understanding of mission command in the context of *Innere Führung*? And finally, where are the differences—from the



Bundeswehr Colonel Rudolf Witzig in 1970

German point of view—between the U.S. understanding of mission command as written in Army Doctrine Publication (ADP) 6-0, *Mission Command,* and the German doctrine?[3]

Mission command wasn't an idea that was introduced into German military thinking by decree. Its implementation was a difficult and long-running process that started in 1806, following a disastrous defeat of the Prussians by Napoleon's army at the Battle of Jena–Auerstedt. By 1812, the higher levels of leadership had learned that Clausewitzian friction in war leads to decisions based mostly on incomplete information. As a consequence, initiative and independent thought and action became important factors in German military thinking. Today, these are integral parts of mission command.

As it so often happens in military history, the next tier of mission command was dictated by technological progress in armament. The introduction of the breech-loading rifle in the middle of the 19th century allowed much more flexible maneuvers. In the late 19th century, Field Marshal Helmuth von Moltke wrote that "it would be wrong if he [the officer] had to wait for orders at times when no orders can be given. But most productive are his actions when he acts within the framework of his senior commander's intent."[4] Another fundamental piece of mission command was born.

Auftragstaktik first surfaced in military doctrine in 1890, and it was disdained as a threat to military discipline. It wasn't until the early 20th century that the term found its way into military doctrine. All through the Great War and World War II, it had a firm place in German Army command and control philosophy.

What is the German understanding of mission command in the context of *Innere Führung*? In 1950, Germany (in close coordination with the United States, Great Britain, and France) began to think about rearmament. For Germany and its population, however, the traumatic experience of two world wars raised the question of the legitimacy of the new German armed forces. These would have to be strictly controlled without any special status by the democratic parliament of the Federal Republic of Germany. At the same time, it was deemed sensible not to discard leadership principles proven to be valuable and successful. The concept that did the trick was *Innere Führung,* which was developed between 1951 and 1953 and has been valid ever since. It consists of the following pillars:

- The integration of the military into the state and society.
- The guiding principle of the soldier being a "citizen in uniform."
- The ethical, legal, and political legitimacy of the military mission.
- The realization of fundamental constitutional and social values in the armed forces.
- The limits of order and obedience.
- The application of the principle of mission command.
- The observance of the statutory participation rights of soldiers.
- The observance of the freedom of association guaranteed in the constitution.

The takeaway here is that mission command may be the only principle taken over from previous German armed forces. And from a German point of view, mission command is not a stand-alone principle but a concept that is seen and always applied by German military leaders in combination with the other pillars of *Innere Führung*.

What are the differences between the American understanding of mission command and the German parent concept? Comparing a foreign philosophy with one's own national concept is a difficult endeavor. People are culturally imprinted through the environment in which they were raised and the education and training that they received. This is even truer for soldiers since their environment influences them more than any civilian environment. And it is true for me and my 14 years of civilian education and 26 years of military training and education. Still, I will give it try.

When comparing ADP 6-0 with the German parent document, two things especially caught my eye. The first is the context or framework of U.S. mission command, which seems to be tightly linked to the concept of unified land operations. Therefore, mission command is one of the foundations that supports the U.S. Army's central aim to "seize, retain, and exploit the initiative to gain a position of relative advantage over the enemy. This is accomplished through decisive action."[5] German mission command is linked to *Innere Führung* and thus, ultimately, to the German constitution. Mission command in Germany isn't a stand-alone concept but is just one of the eight pillars of *Innere Führung.* Because of the challenging historical context in which the German concept was developed, it rests much more on ethical, legal, political, and social foundations than the U.S. approach.

The second thing is the difference between the U.S. and German principles and elements of mission command. The principles of mission command in ADP 6-0 are[6]—

- Build cohesive teams through mutual trust.
- Create shared understanding.
- Provide a clear commander's intent.
- Exercise disciplined initiative.
- Use mission orders.
- Accept prudent risk.

As a German officer, I would happily sign them all without any hesitation. However, the question of how to implement the principles is the tricky part. Being complementary and similar in meaning, the five German elements of mission command are—

- ***Main effort.*** It is through the main effort that the commander will achieve the decisive result in battle. The main effort must always be specified.

- ***Commander's place***. Because the main effort is where the leadership aims to achieve the decisive result, that is where the commander should be on the battlefield. This may mean taking personal command of subordinate units, thereby making the effect of commands felt lower down. Usually, the commander will direct and coordinate firepower and other resources to support the achievement of the aim. From this, it follows that subordinate commanders who are not on the main effort must be capable of functioning for prolonged periods with minimal supervision. And the commander's staff must have the competence and authority to act in the absence of the commander, in close accordance with his or her overall intent.
- ***Commander's intent***. To properly support the main effort, military leaders require a clear understanding of their commander's overall intent and of the battle going on around them. But since a true picture of the battle will never be available to anyone, all commanders must be educated and prepared to act judiciously and decisively in the face of incomplete information. Also, commanders must exercise their creativity by focusing on ***what*** is to be achieved rather than on ***how*** it is to be achieved.
- ***Immediate initiative.*** Opportunities to take decisive actions must be seized and exploited swiftly and violently. At all levels, immediate action without further reference to higher authority is the key. From this, it follows that concise, simple orders—rapidly issued using a common vocabulary to ensure that they are clearly understood—are essential. The motto for this would be that "a good plan, violently executed now, is better than a perfect plan next week."[7]
- ***Higher-level thinking.*** Depending on circumstances, the commander may switch the main effort to reinforce success. When this happens, the subordinate commander at the new main effort will automatically be responsible for the coordination and employment of resources appropriate to a command up to two levels higher than his or her own. The subordinate will need to operate at that level until the commander can move to a position to influence the situation at the main effort.

To summarize, mission command ultimately relies on superiors who[8]—

- Formulate their intent and the desired end state briefly and clearly.
- Provide the necessary resources to allow success.
- Trust their subordinates to act independently toward the given end state
- Feel comfortable delegating and controlling tasks.
- Accept a certain amount of mistakes and provide as much flexibility as possible for their subordinates to allow effective, efficient, and innovative problem solving.

Mission command relies on subordinates who know their trade, understand the intent of their commander, feel comfortable taking on responsibility (frequently, above their rank and pay grade), and can see and exploit opportunities for decisive action without being able to check with higher echelons.

As the historical example shows, mission command is far from being free play and it poses no threat to military discipline. Nor does it fill in or substitute for poor planning. The contrary is true: mission command demands a high degree of discipline from commanders and subordinates and probably requires an even higher degree of trust and initiative. Good mission command is only possible after a thorough planning process conducted before execution.

In conclusion, mission command will add value, especially in a diversified branch like the engineers. Within the engineer branch—with its multiple fields of expertise, its many trades, and myriad related tasks—leaders must give a clear intent (and the resources to attain it), delegate tasks, and trust that their subordinates know their profession very thoroughly. This was true in 1940 and will be even truer in a more constrained, future environment where empowered initiative, flexibility, and out-of-the-box thinking will gain importance.

Anker, Wirf!, or "Throw anchor!"[9]

Endnotes:

[1]Historically, and in this text, the terms *Führen mit Auftrag* (literally, "leading by tasks"), *Auftragstaktik* (literally, "mission type tactics"), and mission command are used interchangeably. *Führen mit Auftrag* is the correct term in German Army doctrine. *Auftragstaktik* is the more commonly known (but misleading) term since it incorrectly implies that this principle is a tactic. Mission command is the common and well-known translation used in English-speaking nations and in the North Atlantic Treaty Organization, used here for practical purposes.

[2]*Innere Führung* (literally, "inner leadership") is officially translated as "leadership development and civic education," German Joint Service Regulation 10/1, *Innere Führung*, 28 January 2008.

[3]ADP 6-0, *Mission Command,* 17 May 2012.

[4]Werner Widder, "Battle Command: Augtragstaktik and Innere Führung: Trademarks of German Leadership," *Military Review*, Vol. 82, No. 5, September/October 2002, p. 4.

[5]ADP 6-0, p. 1.

[6]Ibid., p. 2.

[7]General George S. Patton, Jr., <http://www.generalpatton.com/quotes/>, accessed on 7 October 2014.

[8]Although stating the obvious, it is worth mentioning that in a military hierarchy, superiors are at the same time subordinates and vice versa.

[9] *Anker, Wirf!* is the order given to assemble a floating bridge; it is the motto of the German Army engineers.

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By Staff Sergeant William W. Greer

The Army Leader Development Strategy (ALDS), published in June 2013, emphasizes the importance of education in developing Army leaders to meet the threats of tomorrow. It outlines the vision and strategy of Army senior leaders for developing Army professionals through lifelong training, education, and experiences. It also identifies the imperatives that will influence the development of leaders "with the required qualities and enduring leader characteristics."[1] Chief among these are education and lifelong learning. Lifelong learning entails formal education and self-development. Traditionally, the quest for self-development has included a list of reading selections recommended by experts. In introducing his reading list, Army Chief of Staff General Raymond T. Odierno writes, "A course of personal study and contemplation is an essential component for the individual development of every Army professional. Each of us faces busy schedules every day, and finding time to read and think is a recurring challenge. But even as we train our units and physically condition our bodies, we must improve our minds through reading and critical thinking."[2]

The effectiveness of a reading list is determined by how well it balances available time with the distractions that vie for the attention of readers. A disciplined regimen of professional development for the Soldiers and civilians who comprise the U.S. Army team may be more important now than ever. Operational pictures have changed dramatically since the Cold War, and changes seem to occur almost instantaneously.

The ALDS defines education as "the process of imparting knowledge and developing the competencies and attributes Army professionals need to accomplish any mission the future may present. . . . Education occurs in the institutional, operational, and self-development domains."[3] The institutional domain provides education to enhance the potential of individuals, develop competence in their warfighting skills, and improve their duty performance. The institutional domain for Soldiers is composed of the schools and courses they attend as residents or through distance learning. The courses include military occupational specialty-producing courses, commissioned officer professional courses such as the Basic Officer Leader and Captain's Career Courses, warrant officer courses such as the Warrant Officer Basic and Advanced Courses, and noncommissioned officer (NCO) courses such as the Warrior Leader, Advanced Leader, and Senior Leader Courses. Education also occurs in advanced civil schooling, fellowships, and training with civilian industries. It provides the knowledge and develops the leadership attributes and competencies necessary for increased responsibility.

"The self-development domain implies the continuous process of lifelong learning. It should be encouraged as an important component during institutional and operational assignments."

The operational domain occurs in deployable units and provides the lion's share of leader development. Essentially, all training and education at the unit level develop leaders in the operational domain and prepare them to execute the unit mission-essential task list as required. Building on the foundation formed in the institutional domain, training in the operational domain focuses on individual and team skills and knowledge.

The self-development domain implies the continuous process of lifelong learning. It should be encouraged as an important component during institutional and operational assignments. It bridges learning gaps between the institutional and operational domains. The three variations of self-development include—

- Structured self-development, which consists of sequenced learning modules to impart specific learning objectives. Good examples are the current structured self-development modules that are part of NCO professional development.
- Guided self-development, which is optional, recommended learning that strives to enhance professional knowledge. The traditional reading list is a good example.
- Personal self-development, which is learning that a person selects apart from dictated training. This form of self-development helps a person meet personal training, education, and experiential goals.

In late 2013, the U.S. Army Engineer School, Fort Leonard Wood, Missouri, began laying the groundwork for its professional development program, including a suggested reading list for Soldiers and civilians in the Engineer Regiment. Engineer School Commandant Brigadier General Anthony C. Funkhouser and his staff developed the Engineer Regiment Leader Development Model. This model is a system of simultaneous, nested, and integrated building blocks that are divided into three levels of leaders with clearly defined education, experience, and training goals coupled with historical, doctrinal, and theoretical elements.

Next, the Engineer School director of training developed the reading list to guide the professional self-development of military and civilian personnel. An important aspect of this task was to determine how much professional reading that military personnel of all grades were accomplishing. End-of-course surveys revealed that most junior officers dedicated relatively little time to professional reading. The amount of time was even smaller for NCOs. One could conclude that time constraints prevent professional reading or that reading is no longer the preferred method for assimilating information and advancing self-development.

In March 2014, a committee of military and civilian members was formed to develop an accessible educational resource to foster professional development that would lead to individual reflection, contemplation, and collaboration. The committee sought to discover how Engineer Regiment personnel assimilate information and shape their military knowledge and education. By July 2014, the list of media resources included books, periodicals, movies, YouTube℠ videos, audiobooks, podcasts, and others. Because it is more than a reading list, it is titled the Engineer Regiment's Resource Menu (ERRM). The menu now includes topics in 40 categories. Additional categories and resources may be added as needed.

The ERRM presents the material in learning bands that correspond to the professional level of the user:

- Band 1—the broadest category—contains resources applicable to all grades and ranks. It describes historical trends over time and reasons for future changes. It focuses on Army and joint engineer doctrine and presents materials to help develop critical thinking skills.
- Band 2 materials are most relevant for cadets, enlisted Soldiers, and general schedule (GS) 1 through 11 civilian employees. The band focuses on Engineer Regiment history and battles and presents baseline engineer doctrine.
- Band 3 resources are appropriate for company grade officers, chief warrant officers one and two, junior NCOs, and GS-12 employees. The band focuses on combined arms operations, campaigns, doctrine, theory, and theorists.
- Band 4 is organized for field grade officers, chief warrant officers three and four, senior NCOs, and GS-13–GS-14 employees. It focuses on the operational level of war, joint doctrine, and service level theory and theorists.
- Band 5 is intended for general officers, colonels, chief warrant officers five, senior command sergeants major, GS-15, and senior executive service employees. The selections focus on the joint, interagency, intergovernmental, and multinational doctrine and strategy of war.

The ERRM represents a paradigm shift from traditional reading lists, which tend to be nested strictly in the

(Continued on page 16)

A Team-of-Teams Approach:
Combined Arms Route Clearance During the Retrograde



By First Lieutenant Kevin N. Braam

With an increased focus on retrograde operations in Afghanistan, it has become a challenge for maneuver forces and engineers to effectively defeat the device. Route clearance remains one of the primary combat engineer missions for sapper and clearance companies in Afghanistan. In Regional Command (East), the threat of an improvised explosive device (IED) strike persists. As forward operating bases (FOBs) downsize and equipment is transported out of theater, large combat logistics patrols require engineers to clear the way. This effort is supported through the use of a new acronym and a team-of-teams approach to planning and executing route clearance. This is known as combined arms route clearance operations (CARCO). The very essence of CARCO is not unlike a route clearance package. A patrol still requires a security element, detection equipment, and the means to interrogate an explosive hazard. What has changed is the mandated condition to have enabler support for every patrol.



Soldiers perform basic maintenance on a Husky.

Internal enablers (such as handheld detectors, the Talon® robot, and the Gyrocam®) are still used and are still being improved. The regular integration of an intelligence, surveillance, and reconnaissance platform and the ready availability of an air weapons team or scout weapons team to provide coverage have made route clearance a truly combined arms operation. These assets were certainly not foreign to engineer company commanders on previous deployments, but a company operations section is now obligated to coordinate for these assets before every mission. Platoon leaders must also understand how to integrate each asset effectively. It is through this integration and combined arms execution that a real team-of-teams mentality has been evident within the 22d Engineer Clearance Company.



A Soldier works on a Talon robot.

The 22d Engineer Clearance Company, 14th Engineer Battalion, based at Joint Base Lewis-McChord, Washington, deployed in early October 2013 to FOB Fenty and Camp Phoenix. Their mission was to conduct route clearance on various routes in Regional Command (Capital) and on improved and unimproved roads across Nangarhar and Laghman Provinces. After a successful relief in place, the company's two clearance platoons quickly achieved one of the highest utilization rates of any engineer unit across the combined joint operations area. As with many units before them, regular maintenance, concurrent training, and involved leaders kept Soldiers disciplined and motivated. Despite a lack of enemy activity early on, the various enablers provided a sense of security, with eyes overhead and regular communication with pilots. It was not until early 2014 that the 22d Engineers were truly tested.

With missions supporting retrograde operations as the primary focus, the company was called upon to support unconventional units. Special operations and maneuver forces during the first months of the deployment regularly requested the 22d Engineers to clear a route ahead of them. The main reason that route clearance support was requested was to ensure safety for combined operations between infantry units and the Afghan National Army or to reposition equipment and supplies around the battlefield. The second reason was to support named operations as an attachment to an operational detachment alpha (ODA) team. The 2d Platoon supported one such operation to interdict drug trafficking. The Sappers provided maneuver support and established a wide security perimeter that allowed the ODA team to effectively cordon and search an area. Thorough communication and mission planning, combined with full-dress rehearsals and proper coordination of air assets, made an excellent display of the team-of-teams approach. Despite the significance of the operation and the expectation of enemy contact, the 22d Engineers did not have to face the enemy head-on. It was not until the next time the Sappers were integrated into an ODA mission that their training was called upon.

During mission planning for the next ODA support operation, it was made clear that 2d Platoon needed two fully mission-capable Husky vehicle-mounted mine detectors. To facilitate this, 1st Platoon was tasked to provide a Husky to 2d Platoon. On a cold, sunny morning in January, 2d Platoon began deliberately clearing a route in southern Nangarhar Province. Moving at a steady pace and staying vigilant for IEDs, the Soldiers and the air support covering them had to fight their way through numerous ambushes. Through textbook coordination and disciplined fire control, the engineers showed that they were up to the task of their secondary mission of fighting as infantry. By late afternoon, the route turned to hard-packed dirt and became very constricted. It was when the patrol was near its turnaround point that a mine-resistant, ambush-protected vehicle was disabled by an IED. Unable to self-recover, and with enemy fighters closing in on the location, a request went out for a quick-reaction force. What arrived was not the traditional quick-reaction force unit.

The 1st Platoon had been on standby in the company motor pool most of the day, ready to provide assistance at a moment's notice. When the request for quick-reaction force support came in, the 22d Engineer Clearance Company leaders decided that 1st Platoon could depart the FOB and get to the objective quicker than the maneuver quick-reaction force. After making final precombat checks of equipment and vehicles, the platoon was en route to the blast site well under the normal expected timeframe.

The Soldiers of 1st Platoon moved deliberately down the same route, but with a heightened sense of urgency for what was ahead. Members of the ODA team had already begun their aspect of the operation and were unable to assist. It was on the engineers to support each other and move safely back to FOB Fenty. While clearing a route toward the objective, members of 1st Platoon found a command wire running out of a previous blast hole. After interrogation, they determined that the wire was part of a phased emplacement. They secured the wire and continued clearing. After linkup was made on the ground, the situation appeared even more complicated than initially expected. With the enemy threat neutralized before the arrival of the platoon, the new challenge was how to safely recover the vehicles. The roadway was extremely narrow, which made self-recovery and bypass difficult. The noncommissioned officers in the platoon immediately went to work, identifying turnaround points for each vehicle. Having little room to maneuver the vehicles into position, the engineers improvised a push-pull method to recover the damaged vehicle while avoiding damage to the property of local Afghans.

After an exhausting, all-night process in the extremely confined area, the platoons moved their vehicles back to the main route and proceeded back to FOB Fenty. However, the mission was not complete without one last encounter with the enemy. As the platoons were nearing FOB Fenty early the next day, one round of indirect fire was shot at the trailing vehicle. The round hit the road in front of the vehicle, alerting the Soldiers that they were still in harm's way despite their proximity to the FOB. The night had been long for the Sappers, but familiarity with Army warrior tasks and the intelligence, surveillance, and reconnaissance coverage served as force multipliers. Excellent communication with the ground elements and the 22d Engineer Clearance Company tactical operations center throughout the operation was also helpful.

Through many deployments and some hard lessons that had to be relearned, the CARCO approach to route clearance is an excellent attempt at getting it right. The safety and discipline exercised by the 22d Engineer Clearance Company in early 2014 demonstrated the wisdom of adhering to a well-established standard operating procedure. However, to effectively defeat the device takes more than engineers using internal enablers and good change detection. A team-of-teams approach that brings together different assets is a proven methodology for finding IEDs and having the necessary security to counter a resilient enemy. For the 22d Engineer Clearance Company, platoons of Sappers and heavy equipment operators helping each other and providing mutual support are fine examples of such a mentality.



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("Engineer Regiment's Resource Menu," continued from page 13)

individual learning domain, where the process is contemplative and introspective. The ERRM is focused at the intersection of the institutional, operational, and self-development learning domains, where resources lead to dialogue, feedback, and collaboration. Reading lists usually require many hours of individual reading, but the resources of the 21st century include media that can be accessed and shared with others in a relatively short time. The ERRM provides a flexible way to assimilate knowledge. A movie or video may be a user's preferred method of learning and may, in turn, encourage the user to read professional journal articles or a recommended book on the topic. In the institutional domain, the ERRM has the potential for instructors and students to investigate and develop relevant military topics and issues or to supplement classroom instruction. In the operational domain, it can be used during leader professional development and NCO professional development programs and provide questions for local Soldier and promotion boards. Its uses in the self-development domain are immediately obvious. It allows the user to evaluate the proposed resources, post questions for discussion, collaborate with others, and even shape the menu by suggesting deletions or additions. Users are invited to evaluate and rate the current resources and recommend improvements. To use and shape the ERRM, users should access the site at <https://www.milsuite.mil/book/groups/usaes-commandant-resource-menu> with a Department of Defense common access card.

Army Doctrine Reference Publication 6-22, *Army Leadership*, states that "lifelong learning involves study and reflection to acquire new knowledge and to learn how to apply it when needed."[4] Learning is imperative to ensure the development of leaders for higher levels of responsibility and to ensure success. It is the goal of the ERRM to make self-development a more manageable and rewarding experience. Questions can be posted on the ERRM home page or submitted by e-mail to the Engineer School at <leon.usaes.rfi@us.army.mil>.

Endnotes:

[1]Department of the Army, "Army Leader Development Strategy," June 2013, <http://usacac.army.mil/cac2/CAL/repository/ALDS5June%202013Record.pdf>, accessed on 29 October 2014.

[2]Raymond T. Odierno, "Professional Reading List," 30 July 2014, <http://www.history.army.mil/html/books/105/105-1/index.html>, accessed on 13 November 2014.

[3]Department of the Army, "Army Leader Development Strategy," p. 11.

[4]Army Doctrine Reference Publication 6-22, *Army Leadership*, 1 August 2012, p. 7-6.

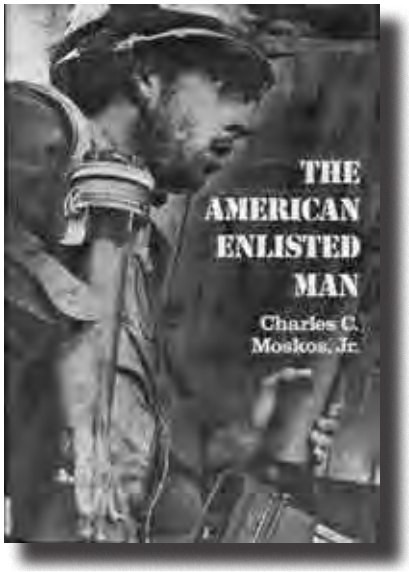


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Book Review

Self-development is a major pillar in the growth of Army leaders. One tool to aid in this is the "Engineer Commandant's Reading List" at <http://www.wood.army.mil/usaes/library/documents/ENGR_CMDT_READING_LIST_2012.pdf>. It includes a variety of books on history, politics, and culture that are appropriate for Soldiers and civilians in the Engineer Regiment. The list is not all-inclusive and will be updated over time.

Book reviews will be a feature in each issue of *Engineer*. Authors will summarize the contents of books of interest and will point out the key lessons to be learned from them. Readers who wish to submit book reviews may forward them to <usarmy.leonardwood.mscoe.mbx.engineer@mail.mil>.



The American Enlisted Man: The Rank and File in Today's Military, by Charles C. Moskos, Jr., Russell Sage Foundation, 1 January 1970, ASIN B0006CU9RG

Reviewed by Staff Sergeant Bryan W. Ehrhart

This book starts out with an old saying: "God must love enlisted men because He made so many of them." The maxim describes the structure of the military, no matter which generation or branch of the military is being considered. Enlisted personnel make up the largest portion of every Service. Moskos explores and defines the mind-set and hierarchy of the enlisted Soldier, giving a window into a world that no readers will experience unless they were enlisted members of the U.S. military. Published in 1970, the book describes an Army that is overwhelmingly male and which would be nearly unrecognizable to today's Soldiers.

In most literature about the military, there is little material that covers the informal aspects of military life. It usually shows only the glossy, formal view of the strong, self-sacrificing "man's man" who lives only to serve his country. *The American Enlisted Man* quickly points out in its first three chapters that during America's early wars, true volunteers among the enlisted ranks were few and far between. Most were "voluntold," working class enlistees who were frequently coerced into joining the Service and had, at most, a high school education.

Moskos describes the attitudes of the enlisted Soldiers when they dealt with high-ranking officers and discusses how they felt about being used to "fill the needs of the Army" by getting trained in different military occupational specialties than they were promised when inducted. He shows the progressive growth of the enlisted Soldier's bitterness caused by the privileges and entitlements of the officers above him during World Wars I and II. This resentment also came to encompass the noncommissioned officers who, while still enlisted, were held in higher esteem than the common enlisted man during the Korean War. The bitterness later spread to include the civilian war protesters on the home front who verbally attacked and, in some cases, brutalized the Soldiers who were returning home from Vietnam. Moskos paints a picture of how the enlisted Soldier became institutionalized and how the unit and company became his family and source of pride.

In Chapters 4 through 6, the author discusses the life of the enlisted Soldier serving overseas tours with or without an accompanying family. He describes the aura of American culture that prevailed at those foreign duty stations (which included more than 20 countries, not counting Vietnam) with the use of American radio and television programs and post exchange complexes that included barber shops, snack bars, movie theaters, and other amenities that Americans would find at home. He discusses race relations and the cultural blending between the American enlisted man and the women in the countries where he served. He talks about the difficulties faced by the enlisted men's children who resulted from such relations with local women and details the obstacles the enlisted man had to go through if he wanted to marry an international woman. Moskos also covers the integration of black American Soldiers into the ranks of previously all-white units.

(Continued on page 19)

Fort Carson Engineers Deploy on Short Notice to Operation United Assistance

By Captain Garrett D. Anderson

Units such as the 82d and 101st Airborne Divisions are familiar with quick-response deployments. The 615th Engineer Company, 52d Engineer Battalion, Fort Carson, Colorado, recently discovered how overwhelming a quick-response deployment can be when it was assigned to construct facilities to support Operation United Assistance, which began in November 2014 to contain the spread of the Ebola virus in West Africa. The battalion has an extensive array of heavy engineer equipment, making the logistical movement and preparation significantly more difficult than the quick-response deployment of a light airborne unit. This article describes how the 52d Engineers met the challenges and lists lessons learned on how the Army can become more agile in the future.



The 52d Engineer Battalion movement officer helps a U.S. Air Force loadmaster tie down a vehicle.

Challenges and Solutions

The first challenge was to recognize that the deployment window was small and that frustrations would be high in the effort to meet the mission. Normally, a unit is aware well in advance that it is scheduled for a potential deployment. This gives the unit plenty of time to train, acquire mission-essential equipment, plan movements, and take block leave before deploying. The deployment preparation is usually a well-planned and well-defined process.

However, the 52d Engineers were in a train/ready phase, having recently supported a National Training Center rotation and returned to the installation in late September. Upon return, the leaders involved were immediately thrust into planning to deploy a horizontal construction unit within 6 weeks. The condensed timeline guaranteed that there would be significant challenges, but the Fort Carson units

"Units must be prepared for quick movement, have updated operation equipment lists, and ensure that all Soldiers are trained for the movement portion of operations."

involved were able to surge to support the quick-response deployment.

The second challenge was the uniqueness of the mission and its effect on equipment requirements. The 615th Engineer Company has heavy equipment that is much larger than most of the Army inventory and must be moved by trailer. Planning this movement required much coordination and many hours of work. Moving the equipment by air was not feasible, limiting the ability to ship needed equipment quickly and forcing the unit to move it by sea. The Fort Carson transportation office worked closely with the battalion unit movement officer and 4th Infantry Division transportation office to coordinate the movement by rail to the port on time.

The final challenge was the dual reporting requirements of the battalion. The 52d Engineer Battalion is located in Colorado; but its higher headquarters, the 36th Engineer Brigade, is at Fort Hood, Texas. The headquarters brigade was deployed for weeks to the National Training Center, which limited communications with it. The solution was to work closely with the 4th Infantry Division logistics office and have the battalion rear detachment stand up quickly. The logistics staff worked tirelessly to guide the battalion as it worked through issues.

Lessons Learned

In a continually evolving world, the military must stand ready to deploy and engage on short notice to any part of the world. Part of this readiness starts with a refinement of many standard operating procedures and training priorities. Units must be prepared for quick movement, have updated operation equipment lists, and ensure that all Soldiers are trained for the movement portion of operations. In this deployment, the battalion had an efficient unit movement officer who helped the new company unit movement officer. Training for quick-response deployments can be accomplished through random emergency deployment response exercises that focus on the documents required to accomplish such movement and train leaders, unit movement officers, pallet-building teams, and hazmat inspectors on their roles and responsibilities. Units must also develop standard operating procedures and checklists that are event-driven rather than timeline-driven. Event-driven deployments will likely become the standard for future operations.

All occupational specialties across the Army must learn from the light infantry units that are prepared to respond quickly and from the lessons provided by this quick-response deployment.

Despite the obstacles, constraints, and limitations encountered, the 52d Engineer Battalion enabled a successful, short-notice deployment with heavy equipment and now has a defined process for pushing out forces and equipment for future quick-response deployments. The efforts of the 615th Engineer Company will save lives and mitigate human suffering. What the 52d Engineer Battalion and Fort Carson accomplished to quickly deploy the company can serve as an example to highlight the direction the Army needs to go as it transitions from the War on Terrorism to a more flexible force.



Captain Anderson is a graduate of the Engineer Basic Officer Leader and Captains Career Courses. He holds a bachelor of science degree from Fayetteville State University and a master's degree in public administration from Webster University. He is the 52d Engineer Battalion logistics officer.

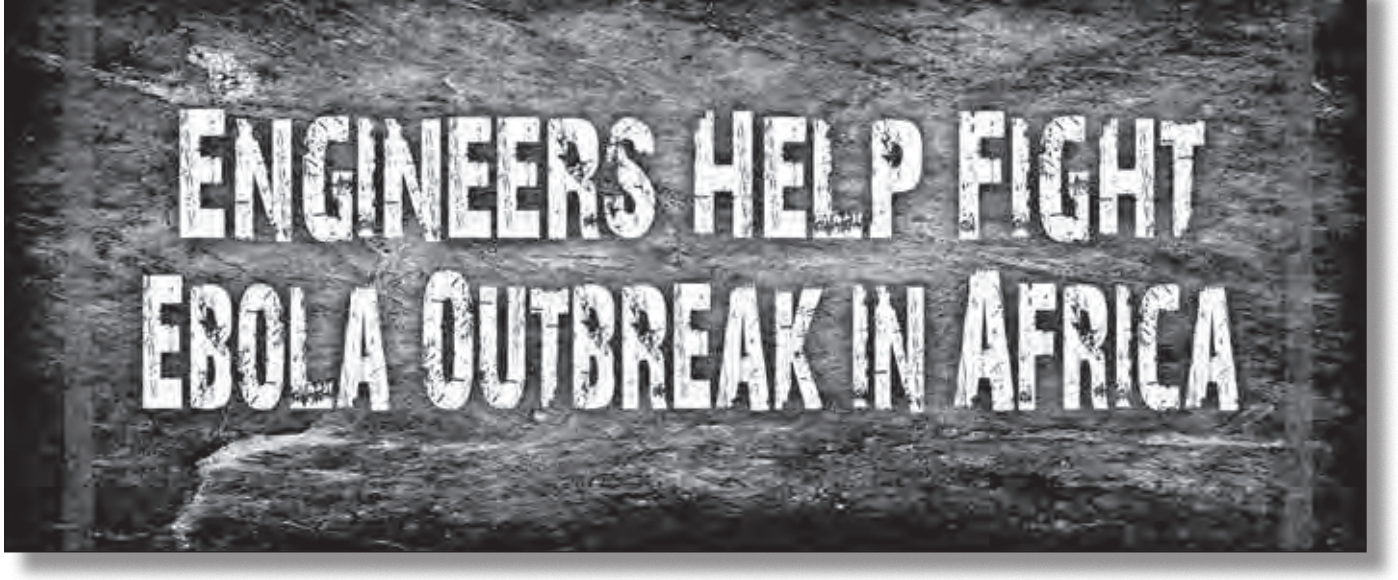
("Book Review," continued from page 17)

In Chapter 7, the author attempts to portray the emotions that enlisted Soldiers felt when dealing with war protesters in the United States as the Vietnam conflict unfolded. Adding to their emotional turmoil was resentment of college students who dodged the draft or had parents wealthy enough to keep them out of the war. They were also witnessing an influx of Soldiers who actually volunteered for service in Vietnam as a way to aid their fellow Soldiers, to gain rank faster, or to escape from a unit where they were unhappy. The war in Vietnam was always in need of more Soldiers.

In the book's final chapter, Moskos explains the motivation and changes that led to the military we have today. A constant theme in the book is that there is a reason behind events and that without those events, necessary changes cannot occur.



Staff Sergeant Ehrhart is the operations sergeant for the Department of Instruction at the Directorate of Training and Leader Development at the U.S. Army Engineer School, Fort Leonard Wood, Missouri.



By Captain Andrew K. Hill

Recently, U.S. Army Africa (USARAF) took part in stemming the 2014 Ebola outbreak in West Africa. The engineering effort fell into three areas:

- Operations of the U.S. Agency for International Development (USAID) disaster assistance response team (DART).
- Construction of Ebola treatment units (ETUs).
- Activation of the Monrovia Medical Unit.

The unity of effort, regional understanding, and understanding of the commander's intent were doctrinal principles used to highlight the successful operational foundation provided by USARAF for follow-on units.

By December 2014, reported cases of the Ebola virus disease in West Africa had reached more than 17,000. The outbreak, starting in December 2013, was a small occurrence that became a regional crisis by October 2014. The U.S. government response began by sending a team from the Centers for Disease Control and Prevention; and in September 2014, USAID requested support from the Department of Defense.[1, 2] The response became Operation United Assistance, which hinged on the construction of multiple ETUs in Liberia. The Engineer Regiment response began by tasking USARAF to provide a civil engineer planner for the USAID team in Monrovia, Liberia.

DART

A DART consists of a small group of U.S. Department of State personnel and other government and humanitarian resources. DARTs from USAID deploy to "coordinate and manage an optimal U.S. government response, while working closely with local officials, the international community, and relief agencies."[3] In September, the Ebola DART in Monrovia was one of four deployed by USAID, with others in Iraq, Syria, and South Sudan. The same month, three military planners were requested for the Ebola DART. This was the first time that a DART would include military personnel.

A U.S. Navy officer deployed as a logistics planner, and a U.S. Air Force officer served as an air planner. The author, an operations officer for the USARAF Deputy Chief of Staff Engineer, provided engineer expertise as the civil engineer planner. DART integration began with a safety briefing that covered Ebola and other, more standard threats. With the health and safety of the team a paramount concern, a contract emergency response flight was on hand for U.S. personnel who might contract Ebola. A small clinic at the U.S. Embassy in Monrovia, Liberia, treated other, standard maladies. Because compound fractures, amputations, or internal bleeding would have been untreatable with the available medical infrastructure, car accidents were deemed the largest risk to U.S. government workers. Despite world perceptions, such standard threats present the largest risk to nonmedical personnel during the outbreak.

"By December 2014, reported cases of the Ebola virus disease in West Africa had reached more than 17,000. The outbreak, starting in December 2013, was a small occurrence that became a regional crisis by October 2014."

The logistics and air planners focused on runway assessment, air bridge development, and other logistic requirements. The civil engineer planner met with personnel from nongovernmental organizations in Liberia to develop a unified approach for the American engineer response. With a variety of agencies and personnel operating in theater, it became imperative to "achieve and maintain unity of effort . . . between the joint force and interorganizational partners"[4] to ensure a rapid and synchronized response. The main effort was the creation of new treatment facilities. The Liberians needed more beds quickly; but since nongovernmental organizations had provided this capacity in the past, nobody in the U.S. contingent had a plan for constructing an ETU. Doctors Without Borders, the largest and most experienced organization, was providing an ETU with 200–300 beds.

An Ebola growth model by the Centers for Disease Control and Prevention would shock the world with the possibility of infections ranging in the millions by January 2015.[5] This message created a sense of urgency and brought much-needed resources to help stem the outbreak. Typically, DARTs deploy to areas after a disaster to help coordinate recovery efforts. This approach starts small, avoiding massive logistic capability and aid that would overwhelm existing infrastructure, build dependency and, ultimately, stifle a self-reliant local recovery. The West Africa Ebola outbreak proved different, presenting a disaster more similar to an enemy invasion than an earthquake or flood. The response was new for the DART, so the U.S. government required "innovative and adaptive leaders and cohesive teams that thrive in conditions of complexity and uncertainty."[6]

ETU

An ETU, in the context of this outbreak, is a 100-bed facility approximately the size of a soccer field, separated into two risk level zones where confirmed and suspected victims can be isolated and treated. It includes ward areas, staff changing and resting areas, various levels of chlorinated water distribution, electrical production and distribution, a morgue, and other ancillary facilities, such as a separate visitor area and a room for religious and social workers.

There are four major lines of effort for an ETU:

- Construction.
- Nonmedical management, such as electrical and water supply.
- Medical care and management.
- Resupply.

The DART was responsible for synchronizing the nongovernmental organizations and agencies responsible for each line of effort. By September, the plan consisted of at least one ETU in each of Liberia's 15 counties, with more in the densely populated Montserrado County, which contains the capital city of Monrovia. U.S. military support was newly arrived, and time was of the essence. Fortunately, the Armed Forces of Liberia started initial planning for ETU construction.

A 14 September briefing about the Liberian construction plans brought together representatives from the U.S. military, the World Health Organization, Doctors Without Borders, and the Centers for Disease Control and Prevention.

The U.S. military personnel worked with the Liberians to develop the bills of material, site adaptations, and contracting documents needed to start construction. Since construction was to start immediately, efforts had to be synchronized, not duplicated. The Liberian military would supply labor and expertise in local methods, the World Health Organization and other organizations would provide conceptual plans and medical expertise, and the U.S. military would provide survey and design capability and funding for materials and equipment.

The first product was a conceptual site layout adapted from World Health Organization plans featuring standard Liberian construction and U.S. Army and commercial tents. The concept was e-mailed to USARAF for computer-aided design drawings. USARAF later used the drawings to geospatially site-adapt the plan to scouted construction sites.

The initial bill of material required a regional understanding of construction to develop appropriate solutions. Designing and building U.S. military standard facilities would over-engineer and lengthen times for ETU construction. Every day without plans meant another day that the



An engineer from the Armed Forces of Liberia cuts wood braces for the Tubmanburg ETU.

"The unity of effort among various agencies and organizations through sustained communication, regional understanding, and partnership with the Liberian military ensured appropriate construction methods and a rapid, synchronized approach that paved a positive way forward for the people of Liberia."

U.S. government was not building ETUs. The bill of material went to USARAF, where it was combined with the concept layout to develop performance work statements. Contracting documents were key to meeting the commander's intent and starting work on the first joint ETU at Tubmanburg, Liberia.

Joint Forces Command was established on 17 September 2014, and four more members of USARAF deployed to Monrovia to form the Joint Forces Command J-7 Engineer. Known as the J-7 (Forward), it had primary responsibility for site surveys, forward contract management, and information gathering. The J-7 (Main) in Vicenza, Italy, provided engineering solutions through providing reachback and focusing effort on contracts and site adaptations.

Monrovia Medical Unit and Redeployment

Along with ETUs, USARAF engineers had a large part in planning another major element of the U.S. response. A 25-bed, U.S. Air Force expeditionary medical support hospital would provide advanced medical treatment to any health care workers who contracted Ebola. The facility became known as the Monrovia Medical Unit.

As the J-7 (Forward) gained personnel, it also gained logistics, air, and engineering planning capabilities that rendered the original military DART planners redundant. As a result, the first military members of a DART redeployed to their respective home stations in early October. USARAF continued to function as the Joint Forces Command headquarters until the 101st Airborne Division took responsibility for Operation United Assistance on 25 October. USARAF engineers weren't alone; they gained support from the 36th Engineer Brigade, the U.S. Army Corps of Engineers, and the U.S. Air Force. In Liberia, they worked closely with USAID, the Armed Forces of Liberia, and the U.S. Marine contingent that mentors them. In 38 days, the USARAF engineer team completed 58 designs, 28 performance work statements, and 30 equipment and material estimates and saw the groundbreaking of six ETUs and the Monrovia Medical Unit.

The unity of effort among various agencies and organizations through sustained communication, regional understanding, and partnership with the Liberian military ensured appropriate construction methods and a rapid, synchronized approach that paved a positive way forward for the people of Liberia. Foundation-setting work by its engineers show that USARAF is a trusted and respected partner that achieved long-term strategic effects in Africa.

Endnotes:

[1]Centers for Disease Control and Prevention, "Update: Ebola Virus Disease Epidemic—West Africa, December 2014," 19 December 2014, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6350a4.htm?s_cid=mm6350a4_w>, accessed on 22 January 2015.

[2]International Information Program (U.S. State Department), "U.S. Offers More Aid for Response to Ebola in West Africa," 16 September 2014, <http://iipdigital.usembassy.gov/st/english/article/2014/09/20140916308491.html>, accessed on 22 January 2015.

[3]USAID From the American People—Who We Are, "Office of U.S. Foreign Disaster Assistance," <http://www.usaid.gov/who-we-are/organization/bureaus/bureau-democracy-conflict-and-humanitarian-assistance/office-us>, accessed on 6 November 2014.

[4]Joint Publication 3-0, *Joint Operations*, 11 August 2011.

[5]Centers for Disease Control and Prevention, "Estimating the Future Number of Cases in the Ebola Epidemic—Liberia and Sierra Leone, 2014–2015," 26 September 2014, <http://www.cdc.gov/mmwr/preview/mmwrhtml/su6303a1.htm>, accessed on 6 November 2014.

[6]Training and Doctrine Command Pamphlet 525-3-1, *The Army Operating Concept,* 31 October 2014.

Captain Hill is the commander of the Intelligence and Sustainment Company, Headquarters and Headquarters Battalion, USARAF. He holds a bachelor's degree in civil engineering from the U.S. Military Academy and a master of philosophy degree in engineering for sustainable development from the University of Cambridge. He is a project management professional and a licensed professional engineer in Missouri.



THE ENGINEER EFFORT IN AFGHANISTAN

By Captain Donald E. Frier

The engineering effort in Afghanistan in 2014 was extensive and impressive, with work that spanned nearly the full spectrum of engineering operations. The many in-theater headquarters—the International Security Assistance Force (ISAF), the ISAF Joint Command (IJC), U.S. Forces–Afghanistan, and the six regional commands—support the strategic, operational, and tactical levels of operations. These commands require dedicated engineering to support the ISAF mission of ensuring security, reconstruction, development, and governance. To effectively support the engineer missions, the engineering directorate in Afghanistan includes several divisions:

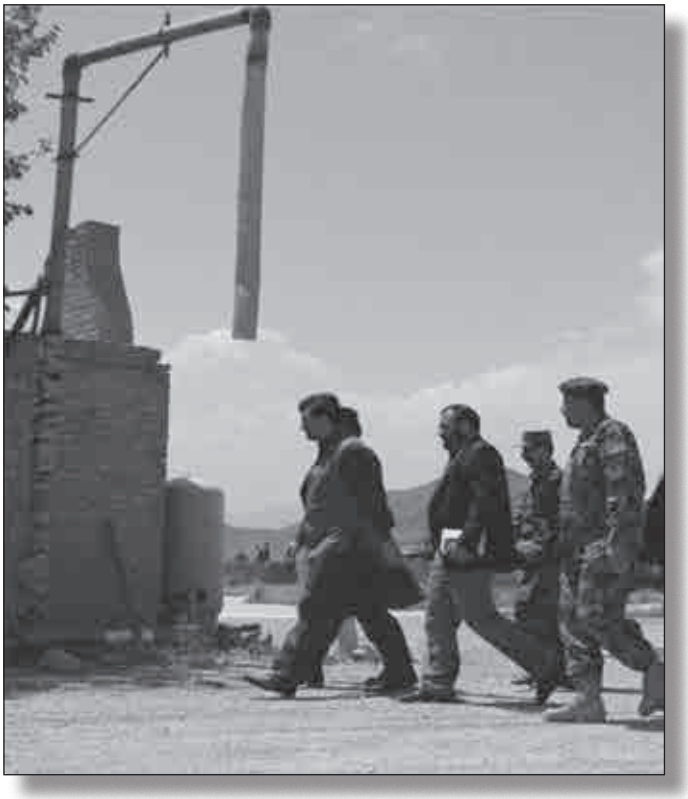
- Combined joint engineer theater operations.
- Counter improvised explosive device (C-IED).
- Theater basing at the IJC level.

These organizations work with their counterparts in the Afghan National Security Forces (ANSF) to ensure that Afghan engineering capabilities will be ready to support the Government of the Islamic Republic of Afghanistan after 2014.

C-IED Mission

The IJC C-IED branch, in conjunction with the NATO Training Mission–Afghanistan, synchronizes the efforts of the ISAF headquarters, the Combined Security Training Command–Afghanistan ministerial advisory group, and the regional command C-IED cells to train, advise, and assist ANSF on its ability to man, equip, train, and sustain its forces. Doing this, we enable ANSF freedom of movement by attacking the network, defeating the device, and preparing the force.

The ANSF is composed of the Afghan National Police (under the Ministry of Interior) and the Afghan National Army (under the Ministry of Defense). The Afghan National Police is divided into eight zones, while the Afghan National Army is divided into seven corps (each with a prescribed number of organic explosive ordnance disposal teams). The ANSF has numerous improvised explosive device (IED) disposal operators and even more explosive ordnance disposal-trained operators. To account for injuries and expected attrition rates, the IJC C-IED team has trained more than



Members of the Base Closure Commission escort fellow Afghans around a coalition base due to be transferred.



Trainers instruct Afghan explosive ordnance disposal technicians on the use of military explosives.

100 percent of the number required by the *Tashkil*, or "modified table of organization and equipment." This sets up Afghanistan and the ANSF to go after and defeat the threat of IEDs.

IJC C-IED has deployed mobile training teams, consisting of more than 185 trainers from more than 27 countries, throughout the theater. The teams focus on train-the-trainer courses that will let the ANSF provide qualified trainers for their own units. This will ultimately reduce the need for coalition mentoring at the unit level, an important step in the transition from a coalition-led fight against the insurgency. The IJC C-IED training section is responsible for the overall training plan initiated in late 2013, which focused on areas that were vital for the 2014 fighting season. As a result of the analysis that was conducted, IJC C-IED was able to train all of the personnel required to fill positions as IED and explosive ordnance disposal operators, explosive-hazard reduction teams, and additional C-IED disciplines within the current ANSF manning structure.

IJC C-IED and the NATO Training Mission–Afghanistan are working to transition training responsibility from the coalition to the ANSF. There are 27 courses for the Afghan National Army and 11 courses for the Afghan National Police that were to be transferred before the end of 2014. As of this writing, 10 of the 27 Afghan National Army courses and five of the Afghan National Police courses had been transferred.

The ANSF explosive ordnance disposal capability is at an overall rating of 84 percent initial operational capability. Currently, they're doing an excellent job, with a found-and-cleared rate of more than 68 percent for fiscal year 2014. In summary, the ANSF C-IED forces have demonstrated the skills necessary to assist during the coalition retrograde, safeguard the population, and defeat the enemies of Afghanistan.

Transition of Bases

As ISAF and IJC look toward the mission after 2014, only a handful of coalition bases will remain. The rest are set to be closed or transferred to different government ministries. Those critical basing decisions are made through an appointed team of Afghan ministerial officials called the Base Closure Commission (BCC). In 2013, there were more than 200 bases in the coalition footprint, but the count was reduced by more than half by August 2014. Afghan officials have indicated that they would like to take over everything—to include real and personal property—but realize that these items entail infrastructure that needs a sustainment plan.

To help resolve these issues, the IJC coalition joint engineer theater-basing team has partnered with the BCC to discuss the closure and transfer of ISAF infrastructure across Afghanistan. The aim is to provide the Afghans with safe, secure, and sustainable basing options. There are several planned monthly events that enable this partnership, provide the necessary dialog, and maintain momentum to obtain key government basing decisions.

The joint base closure working group meets weekly for a 2-hour session to discuss key basing issues, including—

- Changes in the current base plan.
- Confirmation of who will sign for, and accept transfer of, a base.
- Property rights and real estate ownership.
- Infrastructure.
- Property transfer.
- Sustainability.

When necessary, the combined joint engineer theater-basing team hosts and facilitates a planning session. These planning sessions are day-long events that allow for greater dialogue and permit the BCC and theater-basing team to walk through more complex issues. These meetings have also been used to plan visits to the most critical bases throughout the theater.

The theater-basing team escorts and facilitates joint visits with the Afghan BCC to the most critical bases in the Combined Joint Operations Area–Afghanistan. As the number of bases has dwindled, the requirement for site visits has decreased proportionately, except for some of the largest bases. The visits are hosted by the regional command responsible for the base and are jointly attended by senior members of the BCC. The visits allow the BCC to assess how many personnel it will take to maintain security and how much money it will cost to sustain the base. These

important visits have led to Afghan decisions for the movement of units, adjustments of perimeters, and descoping of unsustainable infrastructure. An example is a February 2014 visit to the Camp Bastion–Camp Leatherneck operational base in Regional Command (Southwest), where the BCC decided that the security perimeter was too large and requested that it be reduced in size.

Through this strategic and operational partnership, the combined joint engineer theater-basing team and the BCC have had the same goal—to set conditions for a sustainable Afghanistan as the government postures its security forces to defend the country and its supporting ministries to care for their people.

Direct Interaction

Within the IJC combined joint engineer theater operations branch is a 2-person team focused on ANSF development. While similar to the C-IED branch adviser team, the focus of this team is distinct. It oversees and supports ANSF development for the National Engineer Brigade and each ANSF corps engineer *kandak* (CEK), or "battalion." The National Engineer Brigade is a national asset that is held at the Ministry of Defense level. Because of this, the brigade capabilities of bridging, well drilling, metal working, and general and horizontal construction capabilities support the strategic mission in-theater. The CEKs are very different, being operational assets under the control of the six corps that are spread across Afghanistan. The CEK mission is to provide general and horizontal engineering support to its corps, while each corps is also task-organized with one engineer company that is capable of providing traditional sapper-related functions.

Before being assigned and dispersed to the corps areas of operations, each CEK went through the consolidated fielding center near Kabul. While there, the unit received its initial fill of personnel, vehicles, and equipment. It also conducted basic engineering training, largely led by coalition forces and adviser teams. It was during this time that some CEKs had an opportunity to send a number of students to the Afghan National Army engineer school for formal training, similar to training at the U.S. Army Engineer School at Fort Leonard Wood, Missouri.

After being fielded, each CEK was sent to its geographic area of responsibility, and advise and assist teams were assigned to support them during their approximately 10-month training period. These advise and assist teams varied in size and capability, depending on the requirements of the CEK being trained. The U.S. Theater Engineer Brigade maintains control over most of the teams by providing engineer battalion advise and assist teams to oversee training and progress at the CEKs. Security force advise and assist teams are typically found at the corps level and above, where they advise the corps engineer and staff. A coalition element from the regional command headquarters oversees the engineer advising role within the corps.

At the Ground Forces Command level, Afghan National Army engineer staffs are supported by advisers and partners. While the advisers maintain almost daily contact, the partners meet with the engineer staff weekly and serve as the link between the operational and tactical commands by conducting consistent interaction and facilitating the information flow between the Ground Forces Command engineer staff and the corps security force advise and assist teams. At the Ministry of Defense level, the senior ANSF engineer (known as the general staff engineer) is also advised by a dedicated 2-person team.

Together, advisers and partners at all levels strive to provide functional advice to ANSF engineer leaders from the CEK to the Ministry of Defense. As the ANSF become more and more capable of performing independent operations without advisers, adviser teams are transitioning their mission. The successes that the ANSF continues to show will allow the coalition to prepare for its enduring mission of support and mentoring after 2014.

Working together, advisers and partners at all levels are responsible for supporting ANSF engineers across the full spectrum of engineer operations. Engineer equipment readiness is still an ANSF challenge that impacts the sustainability of the Afghan National Army engineers. By overcoming challenges, the engineers are showing that they are capable of performing critical engineer missions and can be viewed as combat multipliers and experts in their field. With limited assistance from adviser teams, the general staff engineer assembled nearly 100 senior Afghan leaders in May 2014 to discuss engineer-related challenges during a 3-day conference. This was only the second time this forum took place, and it included active participation and briefings from coalition advisers and partners. After coalition-led staff assistance visits to the 215th and 203d Corps in March 2014, ANSF partnered with senior coalition members in a combined staff assistance visit to the 215th Corps to address challenges faced in the field. In addition, Ground Forces Command engineers conducted a 10-day battlefield circulation of their own, visiting each corps to address engineer-specific concerns with their own leaders.

In a short time, the engineering challenges facing the ANSF will be solved with assistance from coalition advisers and partners. With the Afghan National Army engineers demonstrating success at the tactical level and preparing the coalition for their enduring mission to support Afghanistan, attention will be focused on functionally based tasks, with engineer sustainment among the principal challenges. However, it should be remembered that the fielding of these units and the processes used to sustain them are only a little more than 2 years old. The coalition will continue to advise and assist the ANSF in identifying and solving these challenges and will continue to be a devoted member of the team into the future.

Captain Frier joined the Army as an enlisted Soldier and was commissioned through the Reserve Officers Training Corps at Stony Brook University in New York in 2008. He holds a master's degree in teaching from Stony Brook University.

ENGINEER DOCTRINE UPDATE

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

Publication Number	Title	Date	Description (and Current Status)
Publication Revisions			
ATP 3-34.22 (FM 3-34.22)	*Engineer Operations—Brigade Combat Team and Below*	Dec 14	This is a revision and conversion of Field Manual (FM) 3-34.22, *Engineer Operations—Brigade Combat Team and Below*, to Army Techniques Publication (ATP) 3-34.22. It is under development and will include information on the brigade engineer battalion (BEB). **Status:** Current.
ATP 3-34.23 (ATTP 3-34.23)	*Engineer Operations—Echelons Above Brigade Combat Team*	Jul 10	This is a revision and conversion from Army Tactics, Techniques, and Procedures (ATTP) 3-34.23, *Engineer Operations—Echelons Above Brigade Combat Team*, to ATP 3-34.23. **Status**: To be published 3d quarter fiscal year (FY), 2015.
ATP 3-90.61 (FM 3-90.61)	*Brigade Special Troops Battalion*	Dec 06	This is a revision and conversion from FM 3-90.61, *The Brigade Special Troops Battalion*, to ATP 3-90.61. **Status:** Staffing of the final draft is complete, and the final approved draft is being prepared. To be published 4th quarter, FY 15.
Combat Engineering			
ATP 3-34.20 (FM 3-34.210)	*Explosive Hazard Operations*	Mar 07	This is a multi-Service manual and conversion from FM 3-34.210, *Explosive Hazards Operations,* to ATP 3-34.20. **Status:** Additional revisions to the final draft are being made and it is being finalized. To be published 3d quarter, FY 15.
ATP 3-90.4 (ATTP 3-90.4)	*Combined Arms Mobility Operations*	Aug 11	This is a multi-Service manual and conversion from ATTP 3-90.4, *Combined Arms Mobility Operations*, to ATP 3-90.4. **Status:** Staffing of the final draft is complete, and the final approved draft is being prepared. To be published 2d quarter, FY 15.
ATP 3-90.8 (FM 3-90) (FM 5-102) (FM 90-7)	*Combined Arms Countermobility Operations*	Sep 14	This multi-Service manual is a full revision that consolidates FM 3-90, *Tactics*; FM 5-102, *Countermobility*; and FM 90-7, *Combined Arms Obstacle Integration*. It discusses countermobility and combined arms obstacle integration and their relationship to the combined arms defense and warfighting functions with regard to wide area security. **Status:** Current.

"Doctrine is indispensable to an army. Doctrine provides a military organization with a common philosophy, a common language, a common purpose, and a unity of effort."

—General George H. Decker,
U.S. Army Chief of Staff, 1960–1962

ENGINEER DOCTRINE UPDATE

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

Publication Number	Title	Date	Description (and Current Status)
General Engineering			
ATP 3-34.5 (FM 3-100.4)	*Environmental Considerations*	Feb 10	This is a conversion from FM 3-100.4, *Environmental Considerations in Military Operations*, to ATP 3-34.5. **Status:** Staffing of the final draft is complete, and the final approved draft is being prepared. To be published 3d quarter, FY 15.
ATP 3-34.40 (FM 3-34.400)	*General Engineering*	Dec 08	This multi-Service manual is a conversion from FM 3-34.400, *General Engineering*, to ATP 3-34.40. **Status:** Awaiting publication. To be published 2d quarter, FY 15.
ATP 3-34.81 (FM 3-34.170)	*Engineer Reconnaissance*	Mar 08	This is a conversion from FM 3-34.170, *Engineer Reconnaissance*, to ATP 3-34.81. **Status:** Staffing of the final draft is complete and the final approved draft is being prepared. To be published 3d quarter, FY 15.
Geospatial Engineering			
ATP 3-34.80 (FM 3-34.230)	*Geospatial Engineering*	Sep 14	This is a conversion from FM 3-34.230, *Topographic Operations*, to ATP 3-34.80. **Status:** Current.

Notes:

1. Current engineer publications can be downloaded from the Army Publishing Directorate Web site at <http://www.apd.army.mil>. The manuals discussed in this article are currently under development and/or recently published (within 6 months of review date). Drafts may be obtained during the staffing process by contacting the Engineer Doctrine Branch at commercial (573) 563-0003, DSN 676-0003, or <usarmy.leonardwood.mscoe.mbx.cdidcodddengdoc@mail.mil>. The development status of these manuals was current as of 2 February 2015.

2. Items in parentheses are publication numbers of current publications, which will be (or have been recently) superseded by the new number at the top of the entry. Multiple numbers in parentheses indicate consolidation into one manual.

3. Currently, all 30 Army doctrine publications/Army doctrine reference publications have been published. Every Army professional should have a basic knowledge of our fundamental principles since they rarely change quickly. They can be downloaded from the Army Publishing Directorate Web site at <http://www.apd.army.mil>.

Engineer leaders,

One of our key programs for the Engineer Regiment is the Doctrine Sponsorship Program. It was implemented as part of Doctrine 2015, which focused on the improvement and renewal of many of our publications. Commanders were asked to sponsor publications, based on resident skill and experience. We received great support, and the program has proven beneficial in the doctrine development process.

However, we continue to need sponsors. Please contact the doctrine team if you are interested in sponsoring a publication. This will allow engineer doctrine to incorporate essential feedback from the field.

Thank you for your support.

Major Sally C. Hannan, Telephone: (573) 563-2717; e-mail: <sally.c.hannan.mil@mail.mil>.

Mr. Douglas K. Merrill, Telephone: (573) 563-0003; e-mail: <douglas.k.merrill.civ@mail.mil>.

Engineer Doctrine Team, e-mail: <usarmy.leonardwood.mscoe.mbx.cdidcodddengdoc@mail.mil>.



EMERGENCY READINESS DEPLOYMENT EXERCISE:

UNIT REHEARSES FOR NATIONAL EMERGENCY MISSION

By Captain Ian S. Griffith and First Lieutenant Jessica M. Williams

At 0700 on 8 September 2014, the leaders of the engineer company were notified that a civilian vehicle carrying a load of sodium hypochlorite had spilled and affected several square miles. The accident left 25,000 civilians dealing with contaminated water and seeking medical attention.

This was the mission scenario briefed to the 68th Engineer Company (Horizontal), 62d Engineer Battalion, Fort Hood, Texas, during its quarterly emergency deployment readiness exercise (EDRE) in support of the current unit mission as part of the Defense Chemical, Biological, Radiological, and Nuclear Response Force. The EDRE was a 72-hour training event that tested the unit ability to prepare equipment and personnel to respond to a national emergency. If a real-world crisis like the mission scenario occurred, the 68th Engineer Company would conduct a self-sustaining deployment to assist federal, state, and local emergency reaction forces. These agencies



Soldiers tie down equipment in the belly of the plane.

include local police and fire departments, state search and rescue task forces, and the Federal Emergency Management Agency.

Since 1 January 2013, the unit has been tasked to operate as an element of the response forces in U.S. Army North. The company is required to be mission-capable and deployable in a very short period of time. The requirement includes remaining current on training for chemical decontamination, route clearance, and horizontal construction. As a result, Soldiers must be prepared to operate in chemical, biological, radiological, and nuclear environments. They train semiannually in controlled toxic environments to test their mission-oriented protective posture equipment. The controlled-environment training lets Soldiers gain confidence in their protective equipment.

In addition to operating in a contaminated area, essential tasks include debris removal, route clearance, and general engineering construction to allow emergency forces to reach vital areas that need assistance. To support these tasks, Soldiers train weekly on heavy engineer equipment, including crane systems and bulldozers, to create or improve main supply routes and construct areas for military intermediate staging bases. These bases will provide Federal Emergency Management Agency with temporary housing and assist firefighters in search and extraction operations.



Ground guides load a backhoe onto a C-5 Galaxy.

Upon notification, the unit mobilized for an airlift to transport heavy engineer equipment and personnel from Robert Gray Army Airfield at Fort Hood to the contaminated area as part of Force Package One. Two other line platoons were notified to prepare for a 200-mile ground convoy to Camp Bowie in Brownwood, Texas, and the construction of a decontamination site to support personnel and equipment that redeployed from the contaminated area. Teamwork and communication were critical to the success of this exercise since multiple moving pieces had to come together. The 68th Engineer Company commander said that his company was the only unit on post that conducted such a complex EDRE. It served as a combined exercise that supported air load operations training requirements for the unit and for the U.S. Air Force. In this scenario, Air Force loadmasters needed to train on company engineer equipment, such as bulldozers, scrapers, and interim high-mobility engineer excavators. This exercise was also the first chance for the 68th Engineer Company to test loading operations for its new bulldozer and scraper. The experience gained by the Army and Air Force will enhance unit readiness for short-notice deployment, within or outside the continental United States.

During planning, the platoon leaders soon realized that the overall weight for each group of Soldiers in the air load had to be accurately calculated. The largest pieces of equipment—the bulldozer and scraper—were the most challenging. The dozer required significant amounts of shoring materials to load the vehicle onto the aircraft. To prevent damage to the concrete surface of the airfield and the floor of the aircraft by the dozer, a plywood pathway to the plane was constructed. The bulldozer had to be secured in a carefully designated location in the aircraft to ensure proper weight distribution with the other equipment that was loaded at the same time. Although the scraper is a wheeled vehicle,



A member of the 68th Engineers observes as equipment is loaded.



C-5 Galaxy loadmasters confirm clearance of the bulldozer.

its weight was a critical factor while planning the air load. This model is significantly heavier than the earlier model and must be loaded at the exact center of balance of the aircraft. Also, its blade requires shoring to protect the floor of the aircraft.

While executing the air load, operators had to understand the entire load plan and how each vehicle was to be loaded. Front and rear ground guides directed the placement of each vehicle. As each piece of equipment was settled in its proper load position, the Air Force loadmaster directed the assigned tie-down teams in its unique tie-down requirements. This EDRE was the third exercise that the platoon executed within fiscal year 2014. Each EDRE became more complex, with more components that provided realistic training.

The EDRE will provide feedback to help the company improve procedures and develop a feel for the requirements of a real-world emergency. By the end of the 72-hour exercise, the 68th Engineer Company had successfully deployed three deployment packages, consisting of six pieces of heavy engineer equipment. The unit earned commendable ratings during inspections by III Corps, 36th Engineer Brigade, and 62d Engineer Battalion. In addition, the company was able to identify areas that need improvement. Conducting the exercise gave the 68th Engineer Company and the 356th and 68th Airlift Squadrons a great opportunity to train, increase readiness, and better understand the Defense Chemical, Biological, Radiological, and Nuclear Response Force mission. The 68th Engineer Company will be capable of executing its duties in the event of any national emergency and plans to conduct follow-up exercises in the future to maintain mission readiness.

Captain Griffith is the commander of the 68th Engineer Company, Fort Hood. He holds a bachelor's degree in management and engineering administration from Park University and a master's degree in engineering management from Missouri University of Science and Technology at Rolla.

First Lieutenant Williams is the executive officer for the 68th Engineer Company. She holds a bachelor's degree in construction management from Morgan State University, Baltimore, Maryland.

LAYER BY LAYER:

A GEOSPATIAL ENGINEER'S STORY

By Sergeant Julius C. Lomosbog

Some people believe that geospatial engineering is the forgotten component of Army engineer disciplines, but it remains an important asset in supporting missions such as Operation Inherent Resolve. Tactics in the operation rely on mapping and imagery to obtain geospatial awareness and achieve a tactical advantage. This article is meant to provide insight on what it means to serve as a geospatial engineer and on the lessons learned for future success in the field.

Geospatial engineers serve in most brigades and at higher echelons, daily providing various products for different staff sections. The geospatial engineers of the 17th Field Artillery Brigade, which is forward-deployed across four countries in the U.S. Army Central Command area of responsibility, produce and update the daily common operational picture and provide digital and hardcopy products for battle update briefings and targeting working groups. One specialty is the creation of maps that focus on the unit's artillery capabilities, the enemy's weapons capabilities, and the terrain effects on the employment of a wide array of weapon systems. Factors including elevation, slope, obstacles, and hydrology impact the brigade's high-mobility artillery rocket system capability. With the assessments complete, it is possible to produce graphic representations of the brigade capability to engage targets. This critical information provided for the commander and staff assists support brigade operations and helps senior U.S. Army Central Command officials decide where to emplace assets.

In the months leading up to the advance into Iraq by the Islamic State of Iraq and the Levant, the primary focus of the section was providing map products to help maintain partner nation improvements within the U.S. Army Central Command area of responsibility. As the situation in Iraq worsened, the section's requirements accelerated from a crawl to a sprint. Information provided to strike operations included confirming or disproving the activities and disposition of Iraqi Security Forces and their opponents around Baghdad. It ranged from imagery analysis to indirect fires analysis accomplished through change detection, which compares imagery of features collected on different dates. In one instance, after receiving reports of threats to aircraft using Baghdad International Airport, geospatial engineers fused geospatial intelligence with imagery intelligence to produce a single product that portrayed possible locations that posed the greatest threats to aircraft. This was achieved by showing elevated areas that provided a direct line of sight to the airport, verifying the areas with imagery, and then providing that product to Government of Iraq forces to exploit.

As strike operations increased, so did demand for imagery-based requests for information. One example was locating and manipulating the most up-to-date imagery for locations in Iraq and exporting it for use on systems that did not possess the same software capabilities. Imagery exploitation software was an extremely useful tool that allowed the geospatial engineers to place multiple layers of data onto images, allowing a better understanding of the terrain and a fuller analysis of the final product. Another useful product was a SharePoint® geospatial folder that featured simple base maps that visitors could easily access and use for presentations.

There are many ways for geospatial engineers to present the same product. An important aspect of building effective products involves data management and organizational skills. The careful layering of data is important in building an effective composite. An overabundance of data sometimes detracts from the overall effectiveness of a map, so geospatial engineers must assess which layer of data is most important to create the clearest understanding for the customer. Creating a map is like painting a picture, and it is subject to different interpretations. Properly visualizing and representing the layered data is the most important aspect of building an effective map.

Sergeant Lomosbog has been on active duty since 2010. He is the noncommissioned officer in charge of the 17th Field Artillery Brigade geospatial intelligence team, Joint Base Lewis-McChord, Washington.

USACE Builds Women's Dormitory at University of Herat in Afghanistan

By Major Robert T. Moore

As U.S. forces leave Afghanistan, it's natural to wonder what 12 years of war will lead to in this sometimes unstable and often misunderstood country. One project the U.S. Army Corps of Engineers (USACE) built is high atop a hill just north of the city of Herat, overlooking the University of Herat. It is a 370-person dormitory for Afghan women who will come to the university from rural areas outside the city. The facility is a $5 million Commander's Emergency Response Program project designed to provide the young women of Afghanistan with comfortable and safe living quarters while enrolled in the university.

While Americans may take access to higher education and secure living conditions for granted, it is not always that way for women in Afghanistan. In southern Afghanistan, a stronghold for the Taliban, insurgents discourage women from going to school even today. Sharia law, practiced by the insurgents, forbids women from getting an education and may severely punish them for doing so. Women from areas outside the city of Herat either lack the financial resources or are culturally prevented from going to college. Without this newly constructed dormitory, those women would be continually barred from educational opportunities.



Afghan construction workers lay floor tile in the dormitory.



Workers use scaffolding to finish painting the exterior of the dormitory.

The project is a three-story building complete with a library, computer laboratory, kitchen, and bedrooms where women can feel safe while pursuing higher education. Surrounded by a 15-foot rock wall with security guards at the entrance, the dormitory provides a secure refuge for students to pursue advanced learning without fear of reprisal or punishment. The construction was scheduled for completion in February 2015, allowing more than 370 students to move in and start their new path to equality and enlightenment. The women will have a short walk to their classes at the university and then back to their dormitory, which is complete with the educational resources needed to complete their degree programs.

Winning the hearts and minds of the Afghan people has always been a counterinsurgency strategy for the U.S. military. USACE is helping to create an educated population that can build better lives for themselves and their children. Facilitating unfettered access to universities is the first step in creating generations of educated Afghans who can become productive members of society, rather than give in to the lure of insurgents. A USACE representative said the only way Afghanistan will survive is through education. "We're making a difference here by ensuring that women of Afghanistan can get an education without worrying about interference from the Taliban," he said.

The dormitory construction was not without controversy. At one point, the local Afghan police arrived to shut down the project. Undeterred, the Afghan contractor kept working with the intention of finishing the job on time. In a country fraught with corruption, bribes, and cultural gender bias, it's not easy to keep any projects on track, especially those delivering new cultural norms. Ahead of schedule, the university held a ribbon-cutting ceremony on 10 December 2014 that included representatives of the local Afghan government and the U.S. Department of State. Now that construction is complete, books, computers, furniture, and other equipment for students will be installed. Afghan women will soon enroll and start living in the dormitory. The facility will keep them safe while they get an education, something they would otherwise never obtain.

When it comes to winning the hearts and minds of the Afghan people in Herat, USACE seems to have a recipe for success.

Major Moore is a U.S. Army Reserve officer in charge of the Kandahar Resident Office for the USACE Transatlantic Afghanistan District. He holds a bachelor's degree from the U.S. Military Academy. He serves with the USACE Contingency Response Unit, 416th Theater Engineer Command, in Washington, D.C.



SERVING IN A USACE DISTRICT

By Lieutenant Colonel Jared L. Ware

Serving in a U.S. Army Corps of Engineers (USACE) district provides an excellent opportunity to grow professionally, develop emotional intelligence, and sharpen technical skills. While serving as a deputy district engineer, I enjoyed learning about the Nation's civil works infrastructure while being involved with strategic-level engineering initiatives. The assignment gave me the opportunity to attend conferences, courses, and workshops where I networked with a variety of experts and professionals. I also enjoyed the organizational climate and the interaction with our command, staff, project managers, and the employees who operate the district locks and dams. I learned that the Department of the Army civilian workforce is just as devoted to duty as the uniformed members. Serving in the position reinforced the notion that leadership matters and that officers can never stop growing as leaders if they want to achieve mission success within organizations that may be very different from previous assignments. I would recommend a USACE assignment to officers who wish to broaden their career, enhance their leadership traits, and develop additional engineering skills. This article is primarily aimed at officers selected for a deputy district engineer position, but it includes information that may be useful to any officer going to a USACE assignment for the first time.

New arrivals at a district should schedule an appointment with the district commander to discuss their specific role within the district. Every deputy district engineer position has its nuances, and it is best to understand how the commander views the roles and responsibilities of the job. Some commanders will view the position as a pure deputy commander position, some will view it as a chief of staff or executive officer position, some will carve out a set range of priority missions based on a division-of-effort model, and others will view it as a hybrid or mix of any of these views. The key is to obtain the commander's guidance and trust early in the process. This will also allow newcomers to focus their right-seat transition period with their predecessors and devote time to the issues that are important to the district commander. This is critical because most district commanders have busy travel schedules, so deputies



An engineer from the USACE Rock Island District provides flood-fight training to first responders from communities along the Mississippi River.

have to be prepared immediately to lead the district in the commander's absence. It is incumbent upon deputy district engineers to understand and be comfortable with their roles to effectively manage policies and make decisions on behalf of the commander.

The District Officer Introductory Course or the USACE Commanders Course helps officers gain a better perspective on the USACE mission and the most recent initiatives. The District Officer Introductory Course provides an overview of USACE policies, programs, processes, and regulations. It also allows interaction with instructors who are experts in their respective topic areas. The senior-level USACE Commanders Course is aimed at providing division and district commanders with professional development and an update of current USACE initiatives. Most of the briefings are provided by senior USACE leaders, and participants are able to interact with USACE policy experts. Either course will suffice, but it is important to attend at least one. For professional development, I would recommend attending at least one course a year, such as one of those listed on the USACE Learning Center Website at<http://ulc.usace.army.mil/CrsSchedule.aspx>.



An engineering technician from the USACE Los Angeles District ensures that contractors comply with safety procedures.



USACE, in partnership with the New York City Department of Parks and Recreation and the National Park Service, finishes work on the Plumb Beach Coastal Storm Risk Reduction Project in Brooklyn, New York.

USACE offers a variety of courses that contribute to professional knowledge and technical skill sets. Our district encourages leader development and training opportunities for its employees; and if employees see that leaders make self-development a priority, then they will also "sharpen the ax" through relevant professional development activities. Officers will be more effective leaders and communicators if they have a solid knowledge of an engineering commodity area that is vital to their district mission or that occurs within their district geographical area of operation.

Deputy district engineers should invest the effort to develop a solid network with other deputy district engineers and with their district senior civilians. Fellow deputy district engineers are a source of knowledge, ideas, and support. Our division hosted a deputies' summit led by the colonel serving as our deputy division engineer so that we could meet and discuss common purposes. I discovered that many challenges that would have taken me 6 months to research and solve on my own had already been addressed in other districts. Having that trusted network of fellow leaders provided better solutions that could be implemented more quickly. Eventually, I made it a priority to visit every district within the division and learn from their best practices and to share my district's successful ideas with my peers.

It is critical to develop a solid working relationship with the senior civilian leaders in the district. In my experience, the relationship with the civilian deputy district engineer (the senior civilian leader in the district) is the most important one to foster. Most civilian deputies have several years of USACE experience, some have had prior military leadership experience, and all are respected throughout the organization. It is also important to meet with other senior leaders of the district, which will probably include the division chiefs of—

- Engineering.
- Construction.
- Operations.
- Contracting.
- Resource management.
- Office of counsel.

Civilian Employees

For most Army engineer officers, the first opportunity to work with civilian employees will occur when assigned to a district. The workplace rules, the Equal Employment Opportunity Program, and the human resources activities will be foreign turf for most Army officers. One book that helped me to better understand the rules, regulations, and reward system governing civilian employees was *Managing Government Employees: How to Motivate Your People, Deal with Difficult Issues, and Achieve Tangible Results*. During my first week at the district, I had to address a grievance filed by a union employee. Later, I was part of a panel that dealt with the conversion to the National Security Personnel System and then back to the

wage grade system. Reading the book and spending time with the district human resources chief helped me understand how to serve as a leader in the district.

Society of American Military Engineers

The Society of American Military Engineers (SAME) is very popular in most USACE districts and divisions. Most military commanders and civilian deputy commanders end up serving as senior officers in their local SAME chapters. It is one of the organizations that professional Army engineer officers should consider joining.

Stakeholders

Deputy district engineers should meet leaders of the key civilian constituencies within their districts, including—

- Congressional staffs.
- Local officials such as mayors, city managers, and county government representatives.
- State officials.
- Federal officials.
- Academic or nonprofit organization personnel who work inside the district.

Deputy district engineers should expect to serve on committees and in work groups for issues in which their district is involved. The district congressional affairs liaison can provide a booklet that lists the background of the relevant stakeholders in the district, including local, state, and federal political leaders. An understanding of external politics will help establish priorities, add discipline to processes, and address important issues concerning the district.

Rookie Mistakes to Avoid

New arrivals should avoid making the following mistakes:

- ***Showing favoritism.*** Showing favoritism could end up dividing the team. Deputy district engineers must serve as honest brokers and treat all entities with respect, even those with whom they may vehemently disagree. Some non-profit organizations may be eager to support district initiatives, but the door should be open even to those entities that oppose the best efforts of the district. The job is to lead all employees and deal fairly with every constituency and stakeholder.
- ***Speaking out of turn.*** Deputy district engineers should not speak with authority when they are ***not*** the authority. What deputy district engineers say may be interpreted as policy, so they should know the facts before speaking. If they are not comfortable answering a question or addressing an issue, they should decline to answer and request time to research an answer or bring along an expert who can address questions that might arise.
- ***Failing to manage the calendar.*** The deputy district engineer should know the district engineer's calendar and manage access to the executive suite. There will be requests by different constituencies to meet with the district engineer. My rule was that only three people had direct access to the district commander at any point in the day:

  1. The division commander.
  2. The Chief of Engineers.
  3. The district commander's spouse.

At some point, a familiar and respected retired officer who may have served as a division commander or district engineer (and now works as a consultant or contractor) will probably drop in unexpectedly and want to see the commander. There must be a rule for such occurrences. My standard answer was along the lines of, "Sir or ma'am, thank you for stopping by the district; you are always welcome here. But as standard military courtesy, we expect all visitors to schedule an appointment with the district commander, even those with distinguished military service, such as you. We can check with the commander's secretary and see if the commander is available sometime today." The same goes for any district employee or local leader who will inevitably attempt to gain access to the commander. If there is no rule in place, then deputy district engineers should expect the commander to divert all issues from such visitors back to them.

I highly recommend pursuing the opportunity to serve in a USACE district. I found the experience professionally and personally rewarding. I gained leadership and technical skills that would not have been possible to obtain serving in a typical Army line organization. I developed a trusted network of engineer and business professionals who helped me address issues I encountered in subsequent Army assignments. I attended conferences, seminars, training, and workshops that enriched my understanding and appreciation of the Nation's civil works infrastructure and the mission sets of the Corps of Engineers. I learned how important Army engineers are to local, state, and federal agencies and that joint, interagency, intergovernmental, and multi-national activity is alive and well in most USACE districts. The district I served with worked daily with the U.S. Coast Guard, the state governments of Illinois and Iowa, and the Federal Emergency Management Agency. Also, some employees worked engineer programs with foreign countries such as Iraq and Afghanistan. Serving in a USACE district is a rewarding experience that is beneficial to the professional growth of an Army engineer leader.

Reference:

Stewart Liff, *Managing Government Employees: How to Motivate Your People, Deal with Difficult Issues, and Achieve Tangible Results*, AMACON, New York, New York, 26 February 2007.

Lieutenant Colonel Ware serves as the division engineer for the 82d Airborne Division, Fort Bragg, North Carolina. He previously served in the Rock Island District of USACE as deputy district engineer.

DECONSTRUCTING
THE GENERAL ENGINEER BATTALION

By Lieutenant Colonel Samuel L. Volkman and Captain Jennifer G. Acojedo

Whether supporting force realignment, reorganization, growth, or drawdown, the cyclic nature of the constantly changing U.S. Army guarantees future missions to activate, inactivate, and deactivate units. In 2014, the leaders of the 94th Engineer "Wolverine" Battalion at Fort Leonard Wood, Missouri, received the dreaded mission of inactivating. Complex and multifaceted missions are an undeniable fact across the force today. Faced with the unenviable mission of inactivating, the 94th Engineers implemented the operational process to plan, prepare, and execute the assigned mission.

On 8 October 2014, the proud 94th Engineer Battalion cased its colors in a ceremony that allowed Wolverine Soldiers, past and present, to honor and preserve the battalion's rich history and lineage. However, the ceremony itself did not translate into the ability to professionally inactivate. For the 94th Engineer Battalion, success meant reaching the desired end state of having its colors cased, lineage and history preserved, Soldiers and Families transitioned to follow-on assignments, equipment transferred according to disposition instructions, and facilities transferred according to directives.

The military decisionmaking process helped to produce an executable plan, which materialized in Operation Wolverine Hibernation. This four-phased operation used five lines of effort to keep battalion objectives synchronized and aligned with the Department of the Army-directed mission of inactivation. The five lines of effort were—

- Families.
- Training.
- Manning.
- Equipping.
- Facilities.

Families

The battalion put Families as its first line of effort and top priority. This required accounting for battalion Soldier and Family needs while meeting the needs of the Army. The plan placed great emphasis on understanding the climate and concerns that stem from inactivation and personnel relocation. This understanding allowed leaders to restore confidence by executing resiliency summits and company social events, using Family Readiness Groups, and



The Soldiers and colors of the 94th Engineer Battalion render honors at the inactivation cermony.



Lieutenant Colonel Samuel L. Volkman (left) and Master Sergeant Jonas C. Boggess case the battalion colors.

participating in battalion town hall meetings. The battalion commander and command sergeant major gave Soldiers and Families the opportunity to ask questions at the conclusion of all battalion events. Using the chaplain's phone to receive questions via text messages allowed leaders to reach the timid. From the receipt of the mission to its accomplishment, the Wolverines cared for Families, and the effort was felt throughout the ranks. The strength of the Army traces its roots to Families, where a Soldier's most valued advisors originate.

Training

Although the training focus shifted from collective to individual tasks, the operational tempo remained high. The battalion established a goal of dominating basic warrior tasks, military occupational specialty proficiency, and leader development, while achieving 100 percent individual readiness. Commanders focused on dominating the basics and mastering the fundamentals across five domains:

- Physical training.
- Weapons.
- Combat lifesaver skills.
- Combatives.
- Warrior tasks.

As the amount of vehicles, equipment, and personnel steadily declined, individual and team competitions and the use of virtual simulators and obstacle courses received increased emphasis. To maintain military occupational specialty proficiency, the battalion accepted only minor construction missions that required the minimal use of equipment as its organic equipment was prepared for transfer or turn-in. The battalion leader professional development program incorporated events such as—

- Building a fighting position to standard specifications.
- Visiting the U.S. Army Corps of Engineers, St. Louis District.
- Conducting a virtual staff ride of the 2008 Battle of Wanat.
- Holding a Spiritual Strength Seminar.

Further developmental opportunities were presented naturally through the reduction in end strength. Within battalion formations, it became normal to see staff sergeants serving as platoon sergeants and sergeants first class serving as first sergeants. Leaders ensured that all Soldiers left the battalion confident in their ability to shoot, move, communicate, and perform their military occupational specialty tasks: They were trained!

Manning

The battalion manning goal consisted of stabilizing leaders and key low-density personnel throughout the inactivation, which proved challenging. Leaders spent extensive time and effort projecting personnel losses, forecasting unit end strength, rerouting potential gains, establishing a realistic timeline for submitting awards and evaluations, identifying individuals to stabilize, and maintaining awareness of high-risk personnel. Weekly inactivation, relocation, and restructuring meetings were required to synchronize efforts. These meetings allowed leaders to analyze, collaborate, and assess progress.

A few keys to success were stabilizing key personnel, enforcing adherence to the awards and evaluations submission timeline, and establishing a provisional unit. The personnel office developed Rainbow 1, a spreadsheet that depicted the personnel drawdown based on rank, date, and type of move, such as permanent change of station, on-post transfer, enlisted termination of service, or retirement. Rainbow 1 was vital to maintaining battalion systems and functions based on projected departures and helped identify which individuals to stabilize. Despite being short-staffed, the leaders were able to provide coverage while still encouraging Soldiers to take leave. From April to June 2014, subordinate units were required to submit 10 awards per week to ensure that Soldiers who deserved awards got them in a timely manner and to prevent the human resources section

from being overloaded during the last month of inactivation. This policy took advantage of having key leaders available to write awards and a full staff to process them. As Soldiers came up on orders, the personnel office sent the completed award to the appropriate leader for signature. Sometimes, leaders who write awards depart before signing them. Ensuring that Soldiers departed with quality awards written by first-line supervisors explains why such an intense timeline was enforced.

To account for remaining personnel and property, the battalion established a provisional unit that became effective the day the battalion cased its colors. By that time, the only companies that had not reached their Department of the Army-directed execution date were the Headquarters and Headquarters Company and the Forward Support Company. To maintain continuity, the Headquarters and Headquarters Company command team became the provisional unit command team. Conducting the inactivation ceremony before the battalion's execution date of 15 January 2015 was decisive. It allowed us to transfer personnel and equipment to systems (such as the Electronic Military Personnel Office, Property Book Unit Supply Enhanced, and Digital Training Management System), ensuring proper transition. A deliberate and proactive approach—coupled with exceptional communication, teamwork, and initiative—was a recipe for success.

". . . the 94th Engineer Battalion successfully accomplished its assigned mission to inactivate and case its colors. . . .[they will] provide baseline standard operating procedures for unit inactivations across the Engineer Regiment."

Equipping

The goal of the equipping line of effort was to turn in or laterally transfer equipment according to disposition instructions. The disposition instructions involved meticulous tracking and a considerable investment of time. Operators conducted technical inspections on 7,717 pieces of equipment from April to September 2014. Starting early reduced the need to conduct multiple transactions with units. Turn-ins and transfers incorporated visits to the Big Red One Material Redistribution Team, supply support activities, and vehicle processing center at Fort Riley, Kansas. The success of these transactions relied heavily on coordination among the losing unit, gaining units, and Department of the Army civilians. Division support was essential to making the process a straightforward event. The oversight and effective tracking mechanisms of the battalion logistics section allowed the completion of all transactions ahead of schedule.

Facilities

The goal was to be good stewards of Army real property, which will allow follow-on forces to use battalion facilities. A comprehensive consolidation plan progressively reduced the battalion footprint. On 1 September 2014, the logistics section coordinated with installation agencies to conduct inspections and environmental assessments of battalion buildings and motor pools. This enabled the battalion to correct deficiencies and identify possible impediments in advance. Facility transfers required subordinate units to archive documents, properly dispose of classified documents, and send historical artifacts to the U.S. Army Center of Military History or the Institute of Heraldry. By November 2014, subordinate units moved from their company operating facilities to the battalion headquarters which, along with the remaining arms room, was transferred to the provisional unit. Historic artifacts not accepted by the U.S. Army Center of Military History were presented to the Wolverine Alumni Organization, which was founded on 8 October 2014. The professional closure of the battalion facilities and the establishment of the alumni group are direct reflections of the discipline, pride, and stewardship of the 94th Engineer Battalion.

In the end, the 94th Engineer Battalion successfully accomplished its assigned mission to inactivate and case its colors. The emotions of casing the colors stems from Soldier pride in the unit lineage, honor in the history that they are a part of, and allegiance to their colors. Due to the nature of inactivation, the listed lines of effort provide baseline standard operating procedures for unit inactivations across the Engineer Regiment. The 94th Engineer Battalion approach was successful as it responsibly and professionally inactivated in support of the Army of 2020.

To become part of the Wolverine Alumni Organization, visit <www.94thenbnalumni.org>.

Lieutenant Colonel Volkman served as the commander of the 94th Engineer Battalion and is now the executive officer for the Director of Operations, Assistant Chief of Staff for Installation Management, the Pentagon. He holds a master's degree in engineering management from Missouri University of Science and Technology at Rolla and a bachelor's degree in civil engineering from the U.S. Military Academy. He is a licensed professional engineer in Missouri and a certified project management professional.

Captain Acojedo served as the 94th Engineer Battalion operations officer and is scheduled to take command of the 50th Multirole Bridge Company, 5th Engineer Battalion, at Fort Leonard Wood. She holds a master's degree in petroleum engineering from Missouri University of Science and Technology at Rolla and a bachelor's degree in engineering management from the U.S. Military Academy.



ENGINEER WRITER'S GUIDE

Engineer is a Department of the Army-authenticated publication that contains instructions, guidance, and other materials to continuously improve the professional development of Army engineers. It also provides a forum for exchanging information and ideas within the Army engineer community. *Engineer* includes articles by and about commissioned officers, warrant officers, enlisted Soldiers, Department of the Army civilians, 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. Shorter, after action type articles and reviews of books on engineer topics are also welcome.

Articles should be concise, straightforward, and in the active voice. Avoid using acronyms when possible. When used, acronyms must be spelled out and identified at the first use. Avoid the use of bureaucratic jargon and military buzzwords. Text length should not exceed 2,000 words (about eight double-spaced pages).

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Army Engineers and the Society of the Cincinnati

By Mr. Gustav Person

During the War of Independence, Major General Henry Knox, General George Washington's chief of artillery, advocated the creation of "a society to be formed by the American officers and to be called the Cincinnati." Knox wished to form a fraternal organization to honor the service of its members in the fight for independence. The name of the new society was taken from the illustrious Roman general, Lucius Quintus Cincinnatus, who left his farm at the call of his country and led the armies of Rome to victory. When that victory had been achieved, he returned to his plow and refused the honors offered to him by the grateful Senate. The society's purpose was to perpetuate the remembrance of the great struggle and the mutual friendships that had been formed during the war.[1]

Original Members

At the first meeting of the society, held at the New Windsor Cantonment outside Newburgh, New York, in May 1783, Washington was unanimously chosen president-general and held that office to the end of his life in 1799. Major General Alexander Hamilton was then elected president-general and held the office until his tragic death in 1804. Membership was open to all officers of the Continental Army who had served for 3 years or to the end of the war. Later, officers of the Navy were likewise admitted. At the first meeting, members of the French army and navy who had served in America were granted memberships.[2] On 18 December 1783, King Louis XVI of France authorized qualified French officers to accept membership in the society. He consented to be the patron of the society in France and often wore its insignia at court. The French Revolution later caused the dispersion of the membership, and many of the French members perished on the guillotine during the Reign of Terror. Consequently, the Society of the Cincinnati in France was not officially revived until 1925.[3]

All officers were required to contribute one month's pay upon joining to maintain the society and aid members in need. Upon the death of a member, his membership passed to his eldest son. In 1854, it was resolved to admit as hereditary members the eldest male representatives of such Continental officers who did not join the society while still alive. Officers who had died in service were likewise eligible for representation by their heirs.[4]

Additionally, the society provided for the admission of a limited number of honorary members, men whose services and ideals were similar to those of the Cincinnati. Under this provision, some of the most noted men of this and other countries have been elected to honorary membership. The society was organized into 14 branches, one in each of the original 13 states and one in France, which is known as the Order of the Cincinnati. Some of the state societies ceased to exist for a time, owing to the members having been scattered, but all have been restored and continue to flourish today. Triennial general meetings have been held without interruption since the formation.[5]

The Corps of Engineers and the Society

Four engineer officers who served during the Revolution and subsequently became Chief of Engineers included—

- Brigadier General Rufus Putnam of Massachusetts, 1776.
- Major General Louis Le Bègue de Presle Duportail of France, 1777.
- Lieutenant Colonel Etienne Nicholas Marie Béchet de Rochefontaine of France, 1795.
- Brigadier General Henry Burbeck of Massachusetts, 1814.[6]

Probably the most interesting connection between Army engineers and the society is that of the three companies of sappers and miners, formed by Resolve of Congress on 27 May 1778, and the Corps of Engineers, formed by Resolve of Congress on 11 March 1779. Every officer was an

". . .the officers of the French navy presented Washington with the eagle of the Cincinnati richly set in diamonds and other gems."

original member of the Cincinnati, with the exception of Colonel Louis Baileul de la Radière, who died 4 years before the society was instituted. This list included 17 officers, of whom eight were French. The distinguished list also included Colonel Thaddeus Kosciuszko, a Polish officer who later fought for his own country's independence; and Major Pierre Charles L'Enfant, the future designer of the city of Washington, D.C. There were no engineering schools in America during the 18th century, so trained foreign officers were urgently needed during the War of Independence. The majority of these men were seconded from the French army.[7]

The father of the Corps of Engineers, Louis Le Bègue de Presle Duportail, arrived in America in 1777. Commissioned a brigadier general on 17 November 1777, he joined Washington on the eve of the Battle of Germantown. His best known services were in planning and erecting the defenses that kept the Continental Army safe during its darkest moment, the terrible winter of 1777–1778 at Valley Forge, Pennsylvania. When the Society of the Cincinnati was instituted in May 1783, Duportail was among the first to sign what in the society is known as the Parchment Roll, the first list of members. After the war, he returned to France, where the king bestowed on him the coveted Cross of Saint-Louis and a generous annuity.[8]

Society Insignia

The design for the society's insignia was approved at the first meeting; and on 19 June 1783, the officers charged L'Enfant with the duty of having the badges made in Paris. The badge consists of a bald eagle, "a bird peculiar to the American continent," grasping golden olive branches in its talons. Above its head is an olive wreath from which is suspended a ribbon of sky blue and white, "descriptive of the union of France and America." Pictured on the breast of the eagle is a medallion with "the figure of Cincinnatus being presented a sword by three Senators, and in the background his wife standing at the door of their cottage near a plough and other instruments of husbandry." Around the whole is the legend: *Omnia Reliquit Servare Republicam*,"He Left All to Serve the Republic." On the reverse is "a sun rising; a city with open gates, and vessels entering the port; Fame crowning Cincinnatus with a wreath inscribed *Virtutis Praemium,* "The Reward of Virtue," and below, hands joined, supporting a heart with the motto, *Esto Perpetua,* "Let It Be Forever." Around the entire whole is the inscription: *Societas Cincinnatorum Instituta A.D. 1783,* "Society of Cincinnati Founded A.D. 1783." Washington ordered one of the eagles for himself and six others, which he presented to his principal military aides. These eagles were made in Paris in 1783–1784. On 24 February 1784, the officers of the French navy presented Washington with the eagle of the Cincinnati richly set in diamonds and other gems. He wore this eagle at official gatherings of the Cincinnati; and after his death, it was transmitted by his heirs to his successor, Hamilton. Since then, it has been worn by each president-general and is one of the most prized and valuable relics of the modern society. L'Enfant also designed the certificates of membership, which were printed in France and signed by President-General Washington and Secretary-General Knox.[9]

Washington took the greatest interest in the activities of the society and guided them with his counsel. In a letter to Knox on 16 October 1783, he spoke of a gift of $500 to the society. His personal gift to Liberty Hall Academy in



Reproduced by permission of the Society of the Cincinnati

The diamond eagle of the Cincinnati

Rockbridge County, Virginia, so inspired the Virginia branch of the society that its members voted in 1807 to present their entire fund of approximately $25,000 (derived from the contribution of a month's pay by each member) to this institution, which by that time was named Washington College—now known as Washington and Lee University.[10]

By the time the French society was reconstituted, society leaders in America were discussing the need to establish a permanent headquarters. In 1938, that need was filled by an extraordinary gift of the Larz Anderson family of the Virginia chapter, who donated their elegant Washington, D.C., mansion as a headquarters and memorial to the officers of the War of Independence. The headquarters currently serves as the fraternal center of the international organization and home of the society's library, museum, and educational programs. The establishment of an international headquarters led to a dramatic increase in the membership actively involved in the work of the general society. The constituent societies also sponsor a wide range of educational efforts to memorialize the heroes of the Revolution and their ideals.[11]

Endnotes:

[1]Edgar Erskine Hume, "The Society of the Cincinnati and the Corps of Engineers, United States Army," *The Military Engineer*, Vol. XXV, No. 144, November–December 1933, pp. 1 and 2.

[2]"The Origins of the Society, 1775–1783," 2012, <http://www.societyofthecincinnati.org/about/history/origins>, accessed on 26 September 2014.

[3]Hume, pp. 4 and 5.

[4]Ibid., p. 3.

[5]"The Origins of the Society, 1775–1783."

[6]Hume, p. 9.

[7]Ibid.

[8]Ibid., p. 16.

[9]Ibid., pp. 3 and 4.

[10]Ibid., p. 10.

[11]"The Origins of the Society, 1775–1783."

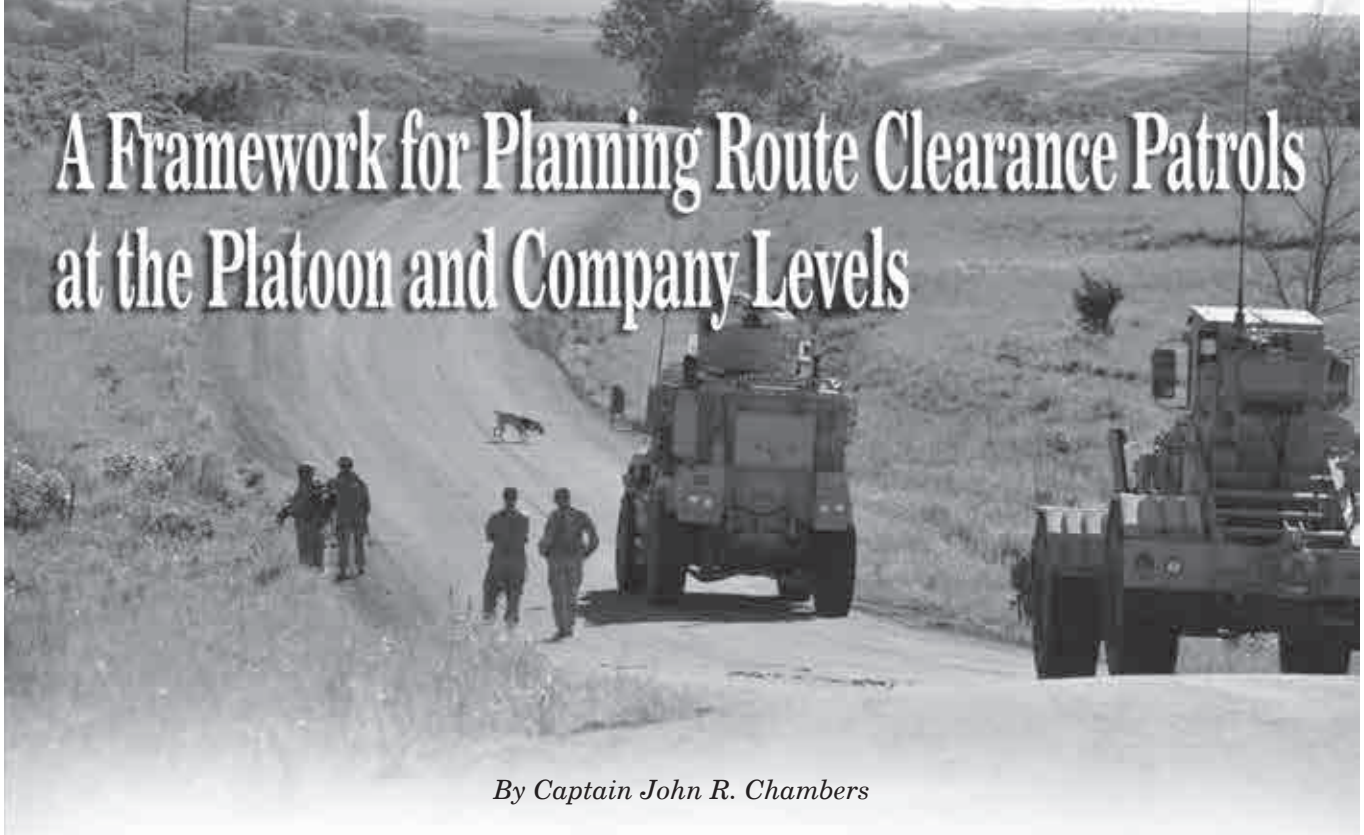
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A Framework for Planning Route Clearance Patrols at the Platoon and Company Levels



By Captain John R. Chambers

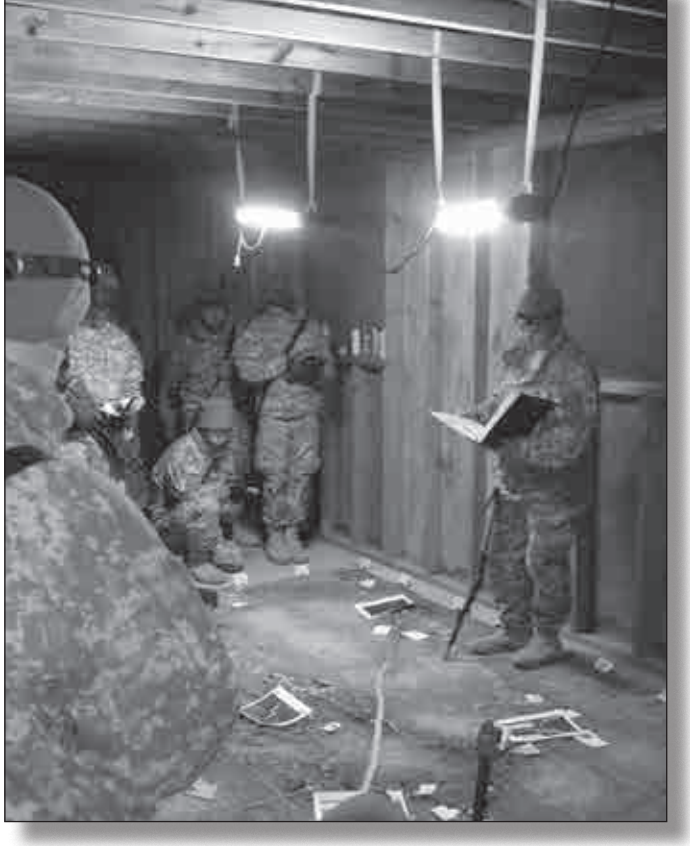
There are two notable deficiencies in current Army counter improvised explosive device (C-IED) and explosive-hazard doctrine: Army Techniques Publication 3-90.37, *Countering Improvised Explosive Devices* and Field Manual 3-34.210, *Explosive Hazards Operations*.[1, 2] The first is that the C-IED doctrine is not geared toward operations in an immature theater. Most of the doctrine refers to using historical improvised explosive device (IED) data to determine the most likely type and location of device and the most likely enemy course of action. However, in the Army's next conflict, historical data may be unavailable and units may have to plan clearance operations with inaccurate or incomplete information on the IED threat. Consequently, leaders must take a more proactive approach to planning with greater emphasis on intelligence preparation of the battlefield. The second deficiency in our doctrine is that it is geared toward the use of the military decisionmaking process by battalion and brigade staffs to plan and execute C-IED operations. It largely ignores the tactical execution of clearance operations at the platoon and company levels. There is no basic doctrinal document that gives junior officers and noncommissioned officers a starting point for the execution of route clearance operations.

As the Army completes the transition back to unified land operations, the Engineer Regiment needs to address these gaps in doctrine before the lessons learned over the past 12 years of planning and executing clearance operations are lost. This article proposes a framework to plan and execute effective route clearance operations using existing engineer doctrine (which was largely ignored in clearance operations during the War on Terrorism). This framework provides a starting point and a way to help clearance elements focus their assets and be more successful in providing mobility for the maneuver commander.

After receiving a mission to conduct a route clearance, leaders are trained to immediately begin troop leading procedures. Officers coming out of the Engineer Basic Officer Leader Course and the Engineer Captains Career Course should be able to issue a warning order, make a tentative plan, and begin necessary movement. However, when tasked with a route clearance mission, most junior officers (especially lieutenants) struggle or fail to conduct a proper reconnaissance to complete their plan. This is the single point in the route clearance planning process where company level leaders can identify potential locations of threats and plan to change their clearance posture to focus their assets and capabilities to find the explosive hazard before it finds them.

". . . engineers are unique not only for their specialized equipment but also for their ability to understand and dominate terrain to maximize the effectiveness of their equipment and personnel."

Anyone can conduct "recon by tire" and drive down a road until they hit an explosive hazard. However, engineers are unique not only for their specialized equipment but also for their ability to understand and dominate terrain to maximize the effectiveness of their equipment and personnel. One of the most effective tools for understanding terrain to focus engineer capabilities is the process of engagement area development. It is vital to remember that the explosive-hazard/IED fight is a mission conducted by enemy engineers (even though they may have little formal training



An officer uses an actions-on terrain model during a briefing for an upcoming route clearance mission.

or affiliation with military engineers). These enemy engineers are developing engagement areas to attack friendly forces and limit their freedom of maneuver. By taking the engagement area development tool in the context of a route clearance mission, friendly engineers can conduct an engagement area development from the enemy's point of view (in other words, a reverse engagement area development) to determine where the enemy engineers are most likely to attack patrols.

Engagement area development consists of the following steps:

Step 1. Identify likely enemy avenues of approach.

Step 2. Identify likely enemy schemes of maneuver.

Step 3. Determine where to kill the enemy.

Step 4. Emplace weapons systems.

Step 5. Plan and integrate obstacles.

Step 6. Plan and integrate indirect fires.

Step 7. Rehearse operations in the engagement area.

Steps 4–7 can be loosely grouped into a single category: determining how to kill the enemy. When conducting a reverse engagement area development for a route clearance patrol, steps 1 and 2 are already complete since the clearance route (or avenue of approach) has already been designated. Therefore, the focus should be on determining where and how the enemy wants to attack friendly forces.

The easiest way to conduct a reverse engagement analysis is to create an engineer modified combined obstacle overlay (MCOO) that is focused on the route to be cleared and the obstacles specific to route clearance operations; for example, canalizing terrain and vulnerable points, as opposed to the more basic mobility restrictions identified on the standard MCOO. The MCOO is a tool that junior leaders in the Engineer Regiment have rarely used over the past 12 years. Though it is still taught in the Engineer Basic Officer Leader Course and the Engineer Captains Career Course, it is not often used in stability operations or applied to route clearance patrols due to the perception that it is only applicable in large-scale, decisive-action, unified land operations. As a result, the MCOO has been largely overlooked in the route clearance fight even though it can easily be applied to route clearance patrols with great effect.

To build the route clearance MCOO, leaders need to—

- ***Identify vulnerable points.*** Vulnerable points are often discussed when conducting route clearance operations, and many people have different ideas on the definition of a vulnerable point. Vulnerable points are transition points on a route or piece of terrain that limit line of sight, maneuver, and/or direct fires.
- ***Identify possible firing points for previously identified vulnerable points***. This is where data on the types of IEDs being used by the enemy is most useful. The location of usable firing points largely depends on the types and capabilities of the explosive device being used. It is also important to remember that the enemy wants to maintain overwatch on their device, regardless of the initiation method, to assess its effectiveness and create propaganda. The brigade level geospatial cell can be a tremendous asset in identifying possible firing points.
- ***Identify ingress and egress routes.*** The ingress and egress routes are tied to the previously identified firing points. When looking at the firing points, leaders must determine what the enemy can use to escape from the area. By tying together the vulnerable points and firing points, leaders can identify possible egress routes and focus their assets on the most likely enemy course of action. Furthermore, this feeds into the development of the fires plan in which the ingress/egress routes and firing points can be targeted with indirect fires and intelligence, surveillance, and reconnaissance (ISR) assets.
- ***Gather information about significant activities and intelligence about possible IEDs***. This historical data helps identify trends and enemy tactics, techniques, and procedures. However, if this data is unavailable or incomplete in initial-entry operations or immature theaters, this step may be omitted.

When these locations have been identified and the data is overlaid on the map to produce the MCOO, leaders can further analyze and identify locations where the enemy may want to engage U.S. forces and then identify which devices and capabilities would be most effective against the friendly patrol. These locations are the enemy's tentative engagement areas. Identifying the tentative engagement areas allows company leaders to make informed decisions about the most likely enemy course of action, determine where to change their clearance posture from hasty to deliberate,

and decide where and how to focus available assets. Once this process is complete, leaders can assign priority information requirements to the tentative engagement areas, at which point they will become named areas of interest. Leaders can then request and use available ISR assets to confirm or deny the priority information requirements that will, in turn, lead to the refinement of their clearance plan. The use of small, unmanned aerial systems and other ISR assets during the execution phase of the operation can provide a tremendous advantage to the clearance patrol leader.



Engineers conduct route clearance operations during a mission readiness exercise at Fort Riley, Kansas.

When leaders create the terrain model to issue their operation order, they should create actions-on terrain models for the individual engagement areas and named areas of interest. Obviously, the length of the route determines the number of engagement areas and it may not be feasible to create a terrain model for each individual engagement area. At a minimum, actions-on terrain models should be built for the most likely and most dangerous enemy courses of action. During the operation order, leaders should give detailed briefings of the actions-on engagement areas and named areas of interest. It is essential that supporting maneuver elements assist in planning and be present during the operation order. All elements should conduct a combined arms rehearsal using the actions-on terrain models. If time allows, full-dress rehearsals should be conducted for clearing engagement areas and named areas of interest, for actions on contact, and for vehicle recovery operations. This will greatly increase the effectiveness and lethality of the clearance patrol.

Planning for a route clearance mission should not be haphazard or neglected. Route clearance is a deliberate operation and should not be planned and executed as a battle rhythm event. Engineer leaders are responsible for ensuring that the maneuver commander understands this. There have been instances over the past 12 years when route clearance patrols (mostly when conducted in a general support role) became a battle rhythm event and were not adequately planned and resourced. This approach left engineers conducting clearance missions without proper supporting assets; and they were frequently uninformed about the enemy threat, the operational environment owner's operations, and additional friendly assets available to them. Resourcing company intelligence support teams within engineer companies and implementing combined arms route clearance operations are two important steps taken to correct this problem. However, engineer leaders need to go a step further and use their knowledge, expertise, and tools throughout the planning process to ensure that route clearance patrols are as effective as possible. They need to ensure that maneuver commanders and staffs identify priority routes for clearance and create an effective mobility synchronization matrix so that all clearance missions are coordinated and in line with the maneuver commander's priorities. These steps will increase success in defeating the enemy, lead to better evidence collection, decrease damage to equipment, and save lives.

Increased effectiveness and better results start with better planning and a better understanding of enemy intent. By developing a route clearance MCOO, conducting a reverse engagement area development, and using actions-on terrain models of engagement areas, clearance patrols will be set up for success. Understanding how this is done will be essential in the next conflict when the first engineer elements will move into an immature theater with little historical data and will be expected to conduct effective clearance operations. This should be addressed in our doctrine now to ensure that the doctrine supports staff personnel and noncommissioned officers who will be tasked with developing and implementing the tactical solutions to the route clearance problem set.

Endnotes:

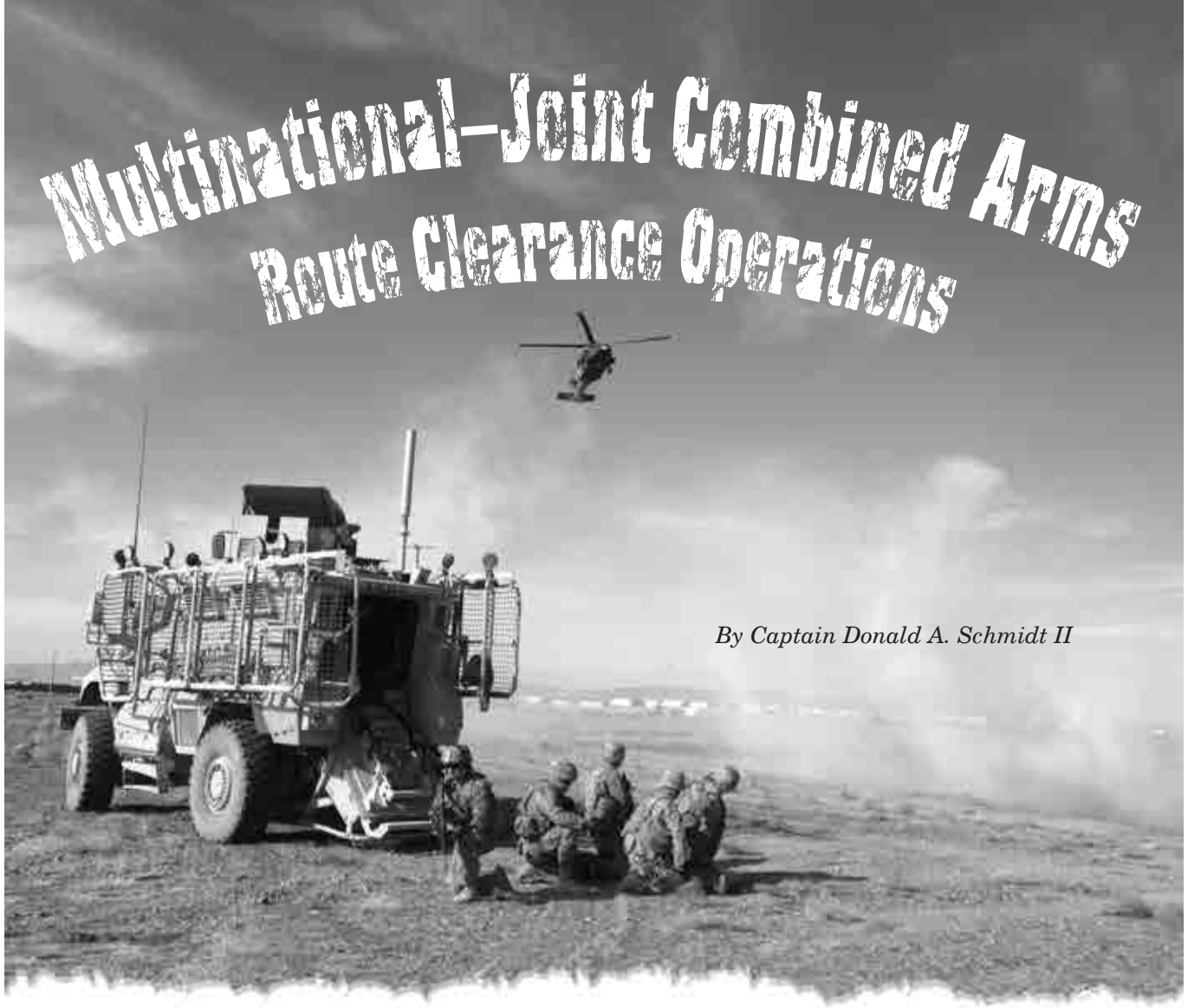
[1]Army Techniques Publication 3-90.37, *Countering Improvised Explosive Devices*, 29 July 2014.

[2]Field Manual 3-34.210, *Explosive Hazards Operations*, 27 March 2007.

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Multinational–Joint Combined Arms Route Clearance Operations



By Captain Donald A. Schmidt II

During a transition from high-intensity, large-scale offensive operations to a consolidation and a responsible drawdown of forces and equipment, it is necessary to economize combat power in support of decisive operations nested with tactical, operational, and strategic lines of effort. In Regional Command (West) in Afghanistan, multinational-joint combined arms route clearance operations maximized combat power while encompassing the warfighting functions and meeting desired end states. There are three points necessary for the successful execution of multinational-joint operations:

- Shared intelligence.
- Established relationships between multinational partners.
- Strong supply, operations, and maintenance sections within a U.S. engineer company task-organized under a coalition-commanded task force.

Multinational–Joint Operations

Multinational collectively describes military actions conducted by forces of two or more nations. For the 576th Engineer Company (Clearance), operational and tactical control resided with Italian Army engineer Task Force Genio. While subordinate commanders in the task force had the opportunity to exercise the art of command, the variables of mission command, command and support requirements, equipment differences, and varied capabilities hindered the science of control while planning for and conducting operations. The mitigation of these issues started and ended with subordinate commander and leader interaction with their coalition commander, counterpart, or enabler.

Joint describes operations supported by elements from multiple branches of Service. In the case of combined arms route clearance teams operating in Regional Command (West), these included enablers from the U.S., Italian, and British Air Forces; the U.S. Navy; and the U.S. Marine Corps. Complex as it seemed, the integration of joint assets into these operations was seamless when proper coordination occurred, starting at the company level. Other than increased proficiency in tactics, techniques, and procedures (TTP), patrol leaders benefited most from learning to understand the accents of different nations and vernaculars of different branches of Service. For example, when spoken over the radio, "the Queen's English" can sound as foreign as Italian to the untrained ear of a U.S. Soldier.

Combined Arms Operations

To maximize the combat power of an economized force, the purpose of a multinational-joint combined arms route clearance operation is to operate independently while internally applying the six warfighting functions:

- Mission command.
- Movement and maneuver.
- Intelligence.
- Fires.
- Sustainment.
- Protection.

There was never a shortage of competent leaders while operating in a multinational task force since leadership is an element of combat power that helps drive the warfighting functions. Soldiers from Italy and other North Atlantic Treaty Organization (NATO) countries may be held to more stringent terms of service, including the length of enlistment and rank progression. For example, the average age of a member of a U.S. Army engineer company is in the early to mid-twenties while in an Italian engineer company, it is in the mid-thirties. Its members may have nearly twice the time in service and/or grade as their U.S. counterparts. The result is an organization with a broader knowledge base and a cohesion that results from less turnover than U.S. units experience.

Information is the second element of combat power that helps drive the warfighting functions. Each coalition nation has its own vehicles, equipment, and weapons systems—not always compatible with each other—which can frustrate the cross-branch understanding of capabilities. This reiterates the importance of information flow between senior and subordinate commanders to allow sound decisions to be made and orders to be disseminated through the operations process. Strong, flexible leaders and mission-ready units must fill in the gaps and execute the mission when information shortfalls occur.

The true test of mission command in a multinational-joint organization is how well a commander and staff can create intelligence-based common situational understanding across the force and then integrate enablers. During mission planning, an unhindered information flow helps to paint the situational picture for the operation. The company intelligence support team collects, exploits, and disseminates the information that is a critical piece of the framework of a combined arms route clearance operation. Mission command resides with the ground force commander, who is usually an infantry or armor commander. However, there is a risk that these commanders might lack an understanding of route clearance equipment or experience in maneuvering it. With training and support from enablers such as a mortar platoon leader or joint tactical air controller, an engineer commander could serve as the ground force commander. Also, an engineer commander would bring knowledge and experience of the TTP and equipment necessary for route clearance, which is the primary function of a combined arms route clearance operation.

The ability to move, maneuver, and protect is important to maintain the combat power of a combined arms route



A U.S. RCP prepares for a mission in Herat Province.

clearance operation. That ability is built into the route clearance package with only slight variations between coalition partners. With a maneuver force enabler, comes direct and indirect fires capability. Transparent to differences in coalition vehicles and equipment, the maneuver force gives a route clearance patrol (RCP) the protection needed to control the explosive hazard site, establish an outer cordon, and close with and destroy external threats.

In a multinational environment, command and support relationships are important in planning and executing sustainment beyond individual patrols. In an operational control relationship (or more commonly, tactical control under a NATO command), coalition partners in a combined arms route clearance operation can support each other. Adding a doctor to the task organization of an operation can offset shortfalls in the capabilities of combat medics, which is an important factor considering the distance of a typical combined arms route clearance operation. Reductions in coalition forces have not always reduced the routes that need to be patrolled. In Regional Command (West), patrols could cover a round trip of 200 kilometers. Also, integrating a U.S. RCP adds recovery assets that generally meet requirements for the entire operation in case self-recovery is not feasible due to vehicle limitations or extensive battle damage.

Supply systems, personnel services, and maintenance support can present sustainment challenges for a U.S. unit that is subordinate to a coalition command. For the services that a coalition partner cannot provide, an administrative control support relationship must be established. When the 576th Engineer Company (Clearance) was subordinate to an Italian Army engineer task force, the responsibility for administrative control and most services and supplies rested with Task Force Bayonet, a U.S. engineer task force in Regional Command (South). Due to this separation, the company was required to accurately track and manage all classes of supply and personnel services (financial, legal, religious, and others) to forecast future needs. In such a modular setting, it is imperative that a company have strong operations and maintenance sections, supported by a competent and forward-looking task force staff.

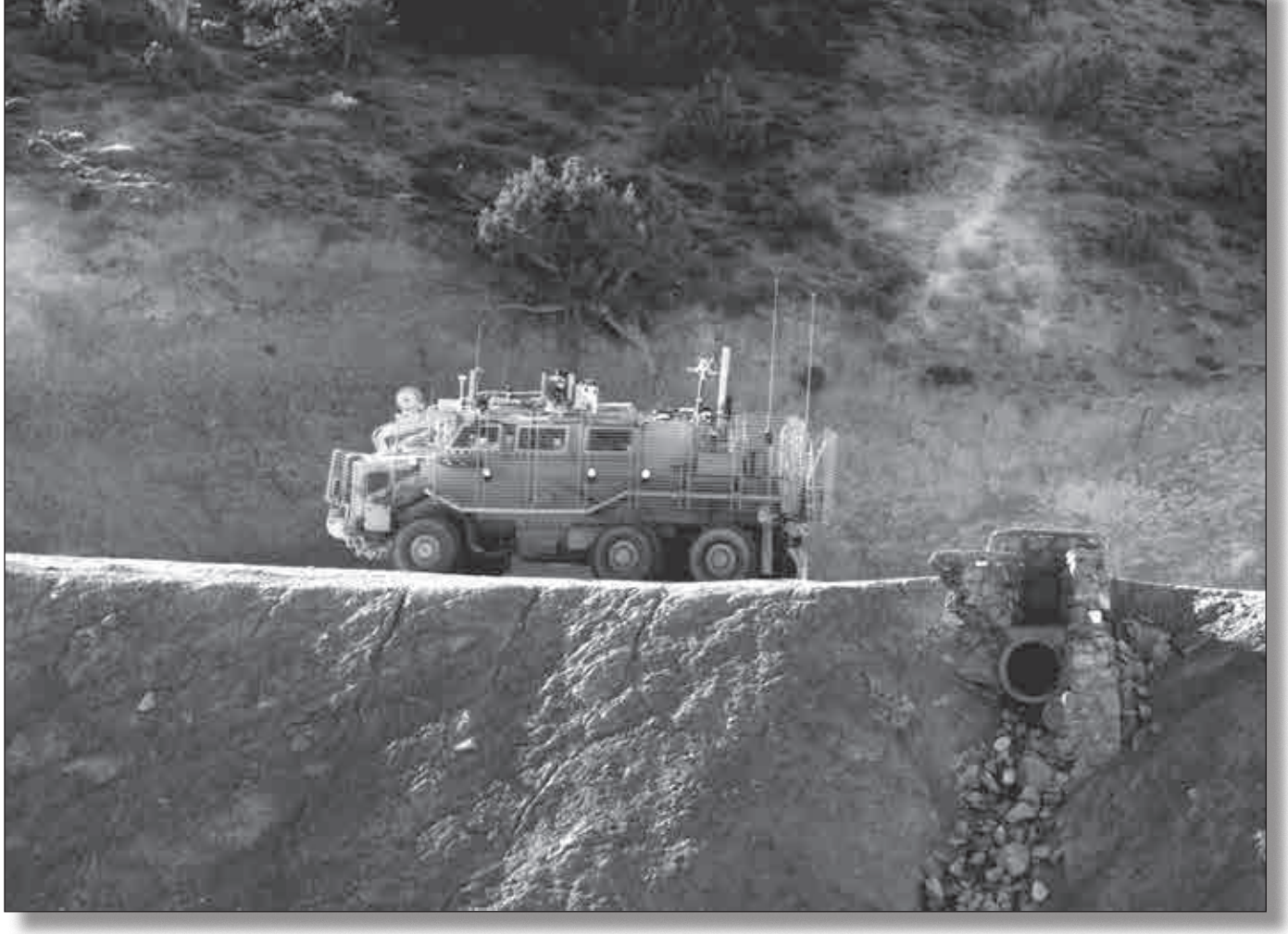
Route Clearance Operations

Route clearance must be maintained to lower the overall threat along a route and to assure mobility. A by-product of a retrograde operation is a reduction of the forces and equipment that support operational needs. Shrinking spheres of influence reduce necessary route security, thus increasing the threat of reseeding once a route has been cleared. Additionally, with a reduction of RCPs, framework route clearance is not possible as the required clearance distances for each RCP increases.

Differences in the equipment capabilities of coalition partners result in different TTP. The advanced technology of their equipment and the amount of organic combat



Engineers conduct medevac training at Shindand Air Base in Herat Province.



A U.S. Army Buffalo conducts route clearance operations in Badghis Province.

power in their packages make U.S. RCPs superior to those of other nations. This makes them best suited for operations along the longer, rural routes that connect widely separated bases. Protection measures, sustainment support, and redundant assets allow U.S. RCPs to operate farther from base support systems, reinforced by combined arms support enablers. However, coalition RCPs are not obsolete in the fight to assure mobility. They are best suited to conduct route clearance where the start point and release point of a patrol is the same location over a single time frame. It is important for coalition RCPs to stay within reach of a quick reaction force, primarily for recovery support. Their less expedient detection capabilities (mainly due to the lack of vehicle-mounted, ground-penetrating radar) impose time constraints that inhibit clearance of the longer routes between bases.

Regardless of the differences in equipment, resources, or TTP, members of U.S. RCPs can learn much from coalition RCPs. By working and training together, U.S. and coalition RCPs can learn, integrate, and execute TTP encouraging personnel to think outside the box, ensure that they can safely execute route clearance operations, recover lost or damaged assets, and ensure mobility.

While there are some difficulties when conducting multinational-joint operations, the chance to build mutual trust and camaraderie between coalition partners at the command and Soldier levels outweighs potential problems. Invaluable experiences often occur, broadening views on how to execute tactical tasks with different equipment. As the cornerstone of a combined arms route clearance operation, RCPs must remain proficient in route clearance and unified action to accomplish the mission. During a retrograde action that will culminate in the closure of most coalition bases, combined arms route clearance operations are the way to safely conduct operations while mitigating the enemy threat.

References:

Army Doctrine Publication 5-0, *The Operations Process*, 17 May 2012.

Army Doctrine Publication 6-0, *Mission Command*, 17 May 2012.

Army Doctrine Reference Publication 3-0, *Unified Land Operations,* 16 May 2012.

Army Techniques Publications 3-90.37, *Countering Improvised Explosive Devices*, 29 July 2014.

Joint Publication 3-0, *Joint Operations*, 11 August 2011.

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The Essayons Button

Sun Mystery Solved

By Colonel Bradley P. Welch

Of the four symbols on the Essayons (or Engineer) Button, one has always been a mystery to me. The rising sun at the lower right of the button, although appropriate in a landscape setting, never had the same iconic connection to the Corps of Engineers as the other three. The eagle is this Nation's most recognizable image, symbolizing its courage and strength. The banner inscribed with the word *Essayons* is the motto of the Corps, sending the message that engineers will try even in the face of overwhelming odds. The bastion represents the engineer missions of construction and fortification. But what is unique about the sun, and why does it have a face?



I stumbled upon what I believe to be the answer some 25 years after I joined the Corps and proudly donned its distinctive buttons. My last day of temporary duty at Joint Base McGuire-Dix-Lakehurst, New Jersey, was cut short, giving me the opportunity to do some sightseeing as I returned to my duty station via Philadelphia International Airport. As I made my way through Freedom Hall, where the Continental Congress formed our Constitution, the park ranger on duty told the story of Benjamin Franklin's remark about George Washington's "Rising Sun" chair.

"As the representatives signed the Constitution, Franklin watched. The president's chair was at the front of the hall, and a sun was painted on the back of the chair. Franklin told some of the members near him that it was always difficult for painters to show the difference between the rising sun and the setting sun. He said that during the convention he had often looked at the painted sun and wondered '. . . whether it was rising or setting. But now at length I have the happiness to know that it is a rising and not a setting sun.' "[1]



Castle Williams

The chair was cordoned off at the far end of the room, too far to discern the exact shape and features of the ornament the park ranger described. Luckily, he had a picture of the chair for everyone to view. Immediately, I knew where I had seen that image before—on my Essayons Buttons!

That provided the *what* of my question, but it did not explain the *why*. A little research revealed that one of the persons credited with the creation of the Essayons Button was Benjamin Franklin's grandnephew, Colonel Jonathan Williams. Colonel Williams (1751–1815), who was the first Superintendent at West Point and sixth Chief of Engineers, lived in



Left: George Washington's "Rising Sun" chair.

Below: Fort Jay sally port statue



France and assisted Franklin from there during the Revolutionary War. He later designed and supervised the construction of the bastion named Castle Williams and supervised the reconstruction of Fort Jay, both on Governors Island, located south of Manhattan Island.

The connection to Benjamin Franklin provided the link. Knowing that Franklin, Washington, and many other Founding Fathers were Freemasons,[1] I tried to find other examples of the sun face image connected to their work.[2] What I found sent a tingle up my spine. The Trophèe d'Armes statue above the sally port at Fort Jay features an eagle holding in its talons a shield with the sun face emblazoned on it. Franklin's Fugio cent, possibly the first coin authorized for the U.S. Mint, bears the image on its front side. John Jay, first Chief Justice of the U.S. Supreme Court (and a Freemason for whom the fort is named) helped devise the state seal of New York.[3] Approximately 15 states contain a sun image on their seal, but only the seal of New York features the sun face.



Fugio cent

Based on his genealogy, fraternity, and the examples of symbols described earlier, I believe that Colonel Williams chose the sun face for inclusion on the Essayons Button. It cannot be conclusively proven, and if documentary proof ever existed, it probably was destroyed along with other official records of the Corps of Engineers in a West Point building fire in 1838.[4] While its full meaning may never be known due to the secrecy of Freemasonry, the mystery of why the sun face is part of the heritage of the Corps of Engineers has been answered for this writer. Our button is forever linked to the belief of the Founding Fathers that, for our Nation, the sun is always rising.

Endnotes:

[1]"Citizen Ben," 2002, <http://www.pbs.org/benfranklin/l3_citizen_founding.html>, accessed on 13 November 2014.

[2]Edward L. King, "Famous Freemasons,"© 1998–2014, <http://www.masonicinfo.com /famous2.htm>, accessed on 13 November 2014.

[3]Alfred Billings Street, *The Council of Revision of the State of New York*, William Gould, Albany, New York, 1859.

[4]"The Engineer Button," <http://www.150th.com/history/en_butt.htm>, accessed on 26 January 2015.

Colonel Welch serves as the Deputy Chief of Staff, G3/7 (Exercises) for the 84th Training Command, Fort Knox, Kentucky. His previous assignment was commander, 397th Engineer Battalion, Eau Claire, Wisconsin.



TECHNICAL ENGINEERS SHOWCASE RELEVANCE IN JOINT OPERATION

By Chief Warrant Officer Two Matthew T. Lizotte

The Nation has repeatedly called on the Engineer Regiment over the past 13 years to support the War on Terrorism. The routine of recovering and refitting following deployments has resulted in a diminished focus on the technical proficiencies of construction engineers while stateside. This has resulted in a misconception of construction engineer capabilities. This phenomenon should remain at the front of every construction engineer's mind. As the Engineer Regiment undergoes its latest transformation and the pace of deployments slows, construction engineer battalions must remain focused on reestablishing their relevance on installations.



Soldiers had to trasverse rugged terrain to collect survey data for the design process.

The Army has initiated the alignment of engineer forces under brigade combat teams. Many installations have witnessed this transformation firsthand with the birth of the brigade engineer battalions. This new alignment, combined with a diminished engineer requirement to support the War on Terrorism, has transformed the focus of construction engineers. The philosophy has evolved from "training to deploy" into "training to refine technical skills." The current military downsizing and budget cuts have put new emphasis on developing low-cost training opportunities that are essential to the success of construction engineers. At Fort Stewart, Georgia, the 92d Engineer "Black Diamond" Battalion understands the importance of these efforts and continuously pursues new ways to improve the perishable skills of its construction engineers. This has frequently led to the development of partnerships outside the organization, which has let the Black Diamonds capitalize on technical training opportunities with customer-funded projects.

The 36th Engineer Detachment (Survey and Design) is crucial to the battalion's success. The detachment is a distinctive, highly sought-after resource and a key contributor to the 92d Engineer effort at Fort Stewart and surrounding communities. One of the few remaining survey and design

detachments on active duty, it provides geodetic survey support, detailed building designs, and material testing analysis to numerous agencies, including—

- 3d Infantry Division brigades.
- Numerous Fort Stewart tenant battalions.
- The Fort Stewart Directorate of Morale, Welfare, and Recreation.
- The 75th Ranger Regiment at Hunter Army Airfield.
- The Fort Stewart Range Control Branch.
- The Fort Stewart Directorate of Public Works.
- The Savannah State University Reserve Officer Training Corps program.

Most recently, the detachment Soldiers had an opportunity to showcase their technical abilities in a joint mission with Joint Task Force North, the U.S. Border Patrol, and the U.S. Army Corps of Engineers. Exactly 1 year after returning from Afghanistan, the detachment traveled to the U.S.-Mexico border to conduct a geodetic survey. Detachment leaders used the mission as the culmination of a collective task on the mission-essential task list: Conduct survey and design operations. The mission was to collect and process data from the geodetic survey and design a road to improve the mobility of the U.S. Border Patrol and increase the security of America.

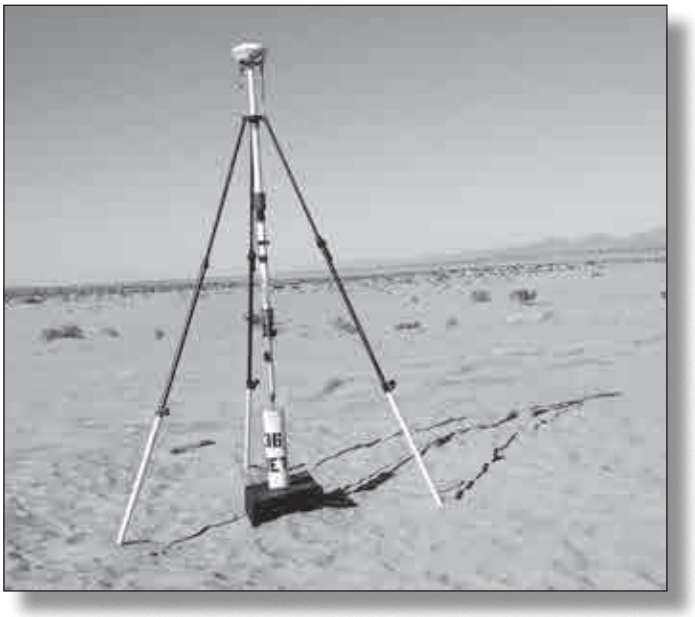
Determined to showcase their talents, the detachment technical engineers surveyed from sunrise to sundown and collected more than 20,000 survey data points, working in 90°F temperatures for 2 weeks. The desert wind and sand relentlessly battered them as they scaled 40-foot sand dunes to survey the required 5 miles of desert. After completing the assigned survey 3 days ahead of schedule, the survey team voluntarily went a step further and surveyed an additional mile of desert, surveyed an entire mountain, and emplaced three survey benchmarks. The benchmarks are semipermanent survey control points that are secured in black concrete diamonds and will be used to align the road during construction. Passing up a well-deserved day of rest from surveying, the team traveled 3 hours before dawn to participate in an 8-kilometer charity run to demonstrate support for volunteer organizations dedicated to assisting wounded veterans.

Since the technical engineers returned from the joint mission, they have processed the collected data, researched technical manuals, and followed the advice of professional engineers to ensure a superior road design. The design team members are determined to do their part to reestablish engineer relevance and highlight their capabilities by submitting a product that exceeds the expectations of Joint Task Force North.

Establishing relevance in the Army of 2020 should be a priority on every engineer's agenda. As commanders develop views of engineer capabilities and ways to use them properly, it is important that construction engineers be a part of the process. If construction engineers fail to validate their existence outside a brigade, they will face the monumental task of reestablishing their relevance as the brigade engineer battalions transform the role of engineers in the eyes of brigade combat team commanders. Construction engineers must seek out partnerships and take advantage of every engineering opportunity presented, no matter the size, to showcase their unique abilities while maximizing training opportun ities. With only a handful of survey and design detachments remaining on active duty, it is imperative that outside organizations understand the capabilities of the detachments so that the assets can be used to their fullest potential.



Technical engineers take ground shots during a joint mission on the U.S.–Mexican border.



A newly constructed "Black Diamond" benchmark monument serves as a base station control point during surveys.

Chief Warrant Officer Two Lizotte is the commander of the 36th Engineer Detachment (Survey and Design) at Fort Stewart. He holds a bachelor's degree in management and human resources management from Columbia College.

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