BUILDING GREAT ENGINEERS SUCCESS

By Captain Joshua A. Morris and Lieutenant Colonel Phillip Kaufmann

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

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

Achieving Success

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

Accessions

As a key starting point, our accessions efforts have included dialogue and engagements with both current and potential engineers. A healthy professional debate about our future from leaders (young and old), officers, warrant officers, and noncommissioned officers across the Engineer Regiment helped add to the momentum. We have seen an 18 percent increase in the number of degreed engineers accessed into the Regiment (from 38 to 56 percent) in the past year. Reserve Officer Training Corps (ROTC) contributions are now 43 percent degreed engineers, and West Point contributions are 70 percent degreed engineers. Our Engineer Personnel Proponency Office (EPPO) continues to engage selected universities with heavy engineer and math degree programs. Their recent accession efforts included Warrior Forge, West Point Tailgate, senior leader panels, and engineer professional organizations. We are anticipating additional positive movement in expanding visibility of the Engineer Regiment by providing opportunities for cadets to work with the United States Army Corps of Engineers (USACE) and visit Fort Leonard Wood, Missouri, to focus on understanding engineer educational development from private to noncommissioned officer to officer. With these efforts, we expect to see additional movement toward increasing the number of degreed engineers in the Regiment.

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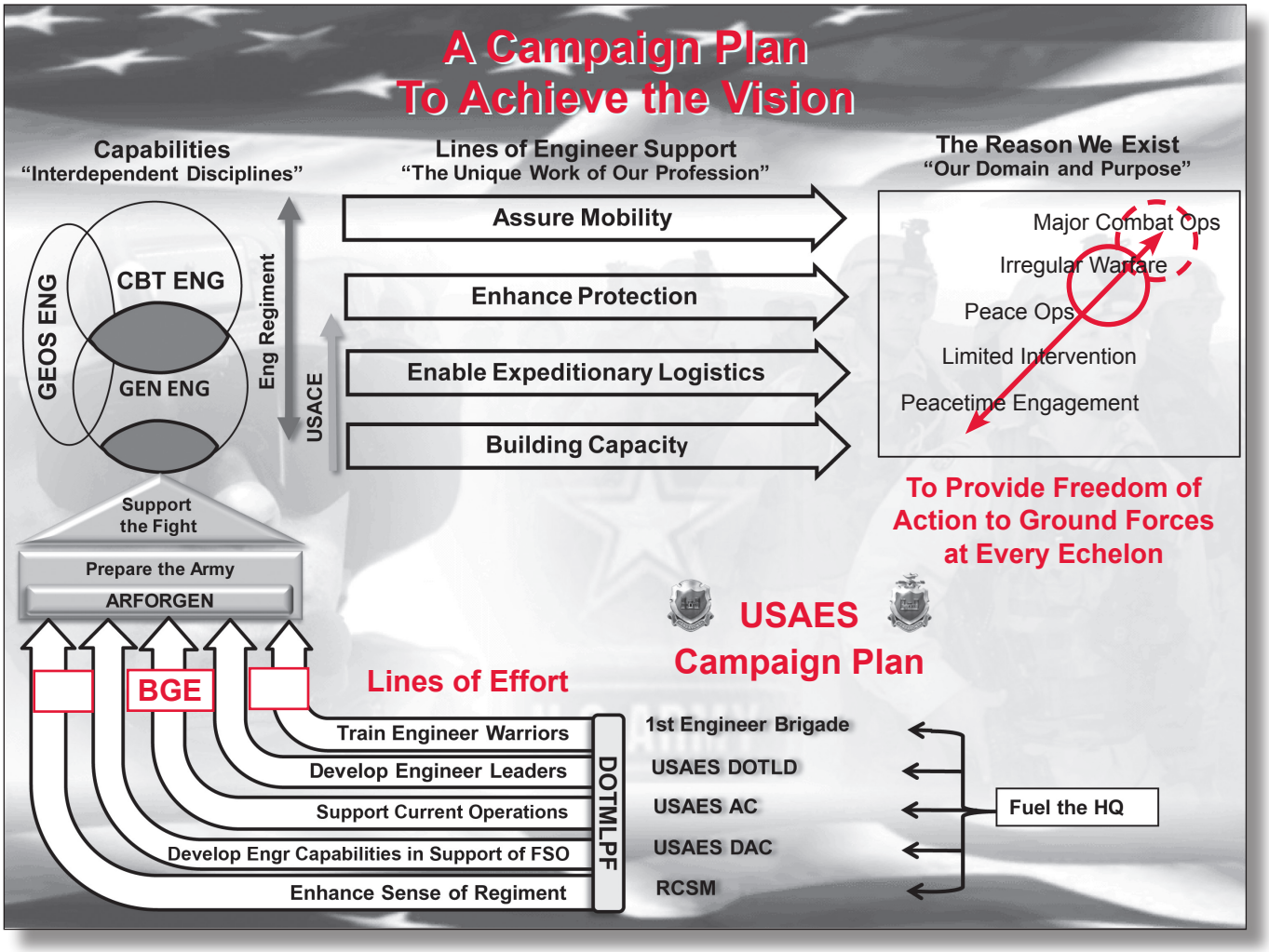
Training and Education

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



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

Employment

In addition to training, we have worked to better employ the existing talent in the Regiment. There has been solid progress toward increasing employment visibility through our Green Pages initiative that better aligns officer supply and demand. As a result, the Army—and specifically our Regiment—will gain visibility of officers' skill sets, education, life experience, and other background information that is currently not maintained in legacy Army personnel systems. In essence, Green Pages matches the talent it needs (demands) with the talent it already has (supply). Officers communicate their desired future assignments and then search all available positions. More important, officers can judge the emerging skill demands and develop themselves to better meet them. In addition, we have finally established skill identifiers to support career development, officer tracking, and talent management as part of a military occupational change of structure (MOCS) proposal being submitted through the United States Army Training and Doctrine Command (TRADOC) to the Department of the Army in October 2010. Officers will be managed and assigned to coded positions, based on officer talents (skill identifiers), thus allowing our Regiment to fill coded positions with officers who possess the right mix of skills.

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

Retention

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

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

Strategic Communications

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

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

- USAES Public Website: Public face of USAES. Contains historical and command information, links to USAES resources (public and protected), and current events and announcements appropriate for public consumption.
- Battle Command Knowledge System (BCKS) Engineer Forum: Contains engineer-related discussion forums and document storage. Requires Army Knowledge Online (AKO)/Defense Knowledge Online (DKO) credentials to access.
- Engineer School Knowledge Network (ESKN): Primary portal to essential engineer resources. Requires AKO/DKO credentials to access. Contains document storage, links, announcements, and request-for-information features. ESKN was recently redesigned to better suit the needs of engineers (replaced Sapper 411).
- *Engineer Blast*: Monthly newsletter from the Army Chief of Engineers. USAES contributes updates and news related to training and upcoming events.
- Commandant's Forum (milBook): Site for collaboration with senior engineer leaders from around the globe.
- Other milBook Groups: Senior Engineer Warrant Officer, EPPO, USAES Historian, and Engineer Force (ENFORCE). Requires AKO/DKO credentials to access.
- USACE Reachback: Requests for information and support provided by Engineer Research and Development Center (ERDC).

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

Challenges

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

Conclusions

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

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

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

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

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