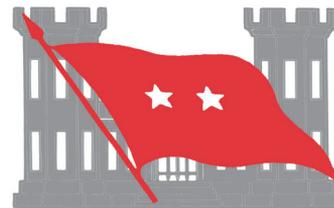


# Clear The Way

By Major General Randal R. Castro  
Commandant, United States Army Engineer School



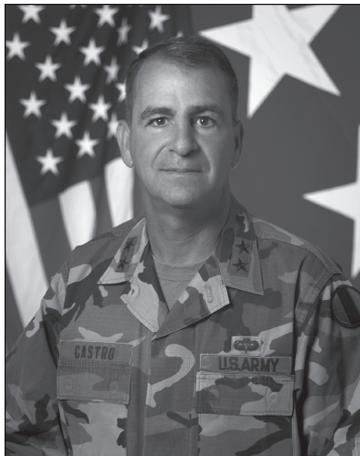
## Our Vision

Welcome to our Summer issue of *Engineer*. I want to begin this issue by thanking all the great Soldiers who are serving our country each and every day. We cannot thank you enough for all the tasks you accomplish day in and day out.

I recently spoke to the leadership of the Regiment at ENFORCE and described our vision for the next two years. What I want to do in this issue is share this vision with you. I want to tell you all the great things we are accomplishing as a Regiment. If you were not able to attend ENFORCE, the slides can be found under Army Knowledge Online (AKO) files (Select the Site Map tab, then Organizational Sites, MACOMs, TRADOC, Schools [right column], Engineer, and MG Castro's ENFORCE 2006 Brief).

I have received many e-mails from across the Army telling me about all the missions you are doing every day. As you have all told me, our engineers are performing many missions outside of our Cold War-era focus of high-intensity combat operations. We are rebuilding nations, constructing base camps, conducting route clearance missions, and supporting our citizens' recovery after hurricanes Katrina and Rita—while continuing to transform to our Modular Engineer Force. These missions range across a broad spectrum of requirements for our engineers. Why are we busier than ever and supporting this broad array of missions? The reason is twofold: our contemporary operating environment (COE) has changed, and our doctrine and national security strategy are changing.

First, the environment we are fighting in has ever-increasing requirements for the capability sets we engineers bring to the battlefield while fighting an asymmetric enemy. The demands of fighting in urban and complex terrain place an increased reliance on what we engineers need to do to support our maneuver and joint commanders. Secondly, our recently published National Security Strategy captures this



and, as a result, has placed stability operations on equal par and priority as combat operations. This profound change expands our mission-essential task list (METL) and is a major rebalancing of our mission set. FM 3-0, *Operations*, (2006 draft) will highlight this difference and will broaden civil support to homeland security. These increasing requirements for engineers make our Regiment more indispensable than ever to our Army and our Nation.

To take the lead in this changing landscape, I have reread our current Engineer School Vision and the Regimental Vision.

## Engineer School Vision

- *A world-class center of expertise in joint engineer capabilities*
- *Recognized leader in developing doctrine, units, and equipment capable of assuring the mobility of the land force—anytime, anywhere!*
- *World's best trainer of military engineers for an Army serving a Nation at war*

## Regimental Vision

- *Assure freedom of maneuver for the land force and maintain relevance to the Nation*

As you can see, the School and Regimental visions are broad, and there is a distinct gap between the two. I intend to focus on this gap and provide you a clearer road map ahead for the next two years.

I believe that there are three essential tasks we must continue to accomplish from now through FY08: We must continue to support the Global War on Terrorism (GWOT); we must complete the transformation of the Regiment; and we must posture the Regiment for the next transformation in order to remain indispensable to our Army and the Nation. These are the three major lines of operations on which we are moving forward, and I want to synchronize our efforts.

The **Regimental Vision** through FY08 is to continue to support GWOT with trained modular organization and complete the modular force and institutional transformation, while posturing for the next transformation.

(Continued on page 4)

# Lead The Way

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



Greetings once again, and welcome to another issue of *Engineer*. This has been a very busy quarter for our Regiment. Among the many events that took place were our annual ENFORCE Conference, which included the 2d Annual Best Sapper Competition and the dedication of the Sapper Statue at the Engineer Memorial Grove. We were honored to have Mrs. Brigit Smith with us for the unveiling of the Sergeant First Class Paul Ray Smith Medal of Honor plaque at the Memorial Grove. Mrs. Smith also dedicated the Medal of Honor Flag to the Regiment; the Flag is proudly displayed in the Regimental room.



ENFORCE week ended with the Regimental dinner and presentation of the annual Regimental awards, which included the Itschner and Outstanding Engineer Platoon Leader (Grizzly) Awards, the Sturgis Medal, and the Van Autreve Award. The recipients of these awards—from the Active Army, United States Army Reserve, and the Army National Guard—are listed on page 38. The 2006 Best Sapper Competition winners are listed on page 26. The recipient of the 2006 Gold deFleury Medal was Major General Jack Waggener (Retired). This year, Lieutenant General Carl A. Strock, Chief of Engineers, awarded a second Gold deFleury posthumously to Sergeant First Class Paul Ray Smith. Mrs. Smith accepted the medal in his honor.

We continue to improve our training here at Fort Leonard Wood. A few courses that are going well include the Route Reconnaissance/Clearance Operations Course, the IED Defeat Train the Trainer (IEDD T3) Course, and the Urban Mobility Breaching Course. I need assistance from the field in supporting the Mine Dog Course. At the same time, we have taken some of the functional courses and inserted them into initial-entry training (IET), the Advanced Noncommissioned Officer Course (ANCOC), the Basic Noncommissioned Officer Course (BNCOC), the Officer Basic Course (OBC), and the Captain's Career Course (CCC). These courses will be the foundation of how we will build our forces over the next couple of years.

Today's Noncommissioned Officer Education System (NCOES) is a rigid, task-based system designed around the select-train-promote model, instead of training the NCOs for a mission and wide range of assignments that are encountered on today's battlefield. NCOES should remain focused on the

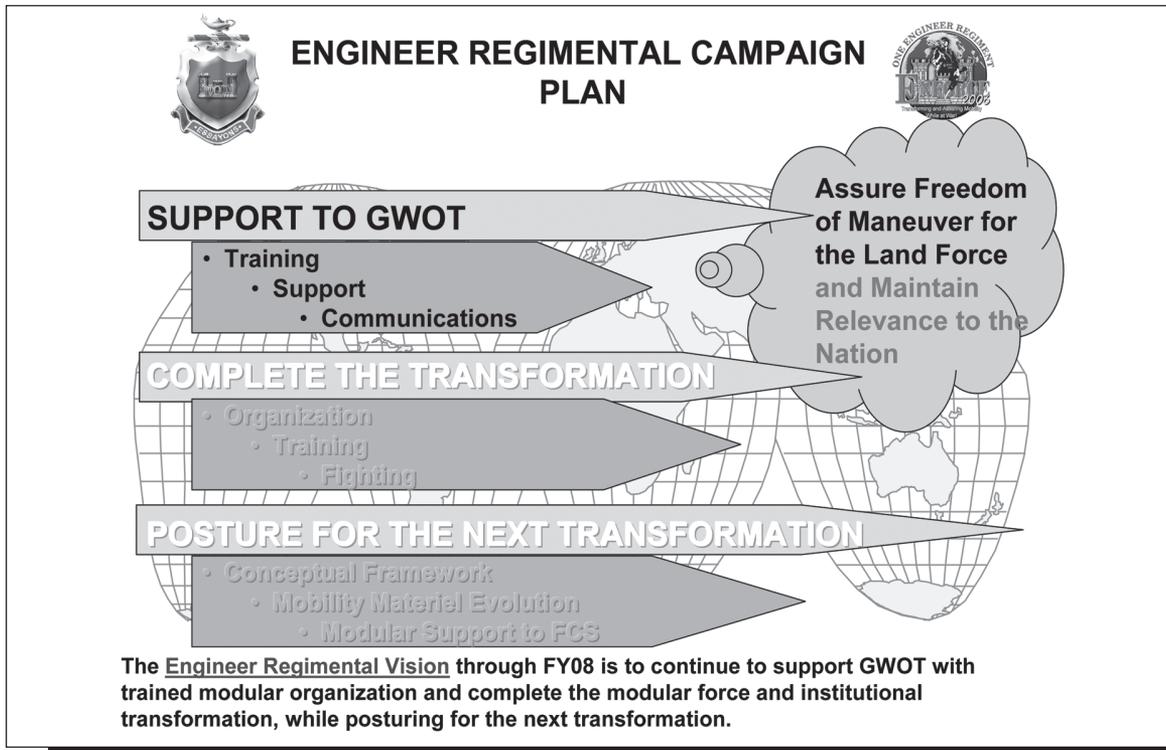
core areas of leading, training, maintaining standards, caring for Soldiers, technical competencies, and tactical warrior skills, while integrating greater conceptual and interpersonal skills. We must ensure that we continue to provide first-class training to a first-class NCO Corps. We have identified the need to support the Army Force Generation (ARFORGEN) model by providing an opportunity for NCOs to receive training at home station. The goal is to continue to send NCOs to resident courses; however, when the opportunity and need arise, we will send a mobile training team (MTT) to conduct the training. We have an opportunity to send an MTT to Fort Bragg this summer to teach BNCOC, which will allow Soldiers to remain at home with their families and attend the course.

As we continue transforming to a Modular Engineer Force, we will activate the 4th Engineer Battalion at Fort Carson. In FY07, the following units will be activated: 326th Engineer Battalion, 62d Engineer Battalion, 7th Engineer Battalion, and the 11th Engineer Battalion. We reflagged the 36th Engineer Group to the 36th Engineer Brigade and will relocate the unit to Fort Hood. I would like to personally welcome the 94th Engineer Battalion advance party from Grafenwoehr, Germany, as it begins to restation here at Fort Leonard Wood. Some of these great Soldiers are here preparing their motor pool and headquarters to receive the main body. Fort Leonard Wood welcomes these great Wolverine Warriors.

I would like to congratulate Sergeant Major Terrence Murphy, who was appointed to the rank of Command Sergeant Major. It was a great honor for Brigadier General Todd T. Semonite and me to promote this great Soldier. We wish him and his family the best as he moves on to take a great battalion at Fort Hood.

Once again, I would like to say thank you for all of your efforts and contributions in supporting the Global War on Terrorism; we continue to transform the Regiment. As each day comes, let us keep in mind all the families of the Soldiers who have given their lives for this great Nation. There is no greater love than for a man to lay down his life for a friend or brother.

Essayons!



### Support to GWOT

Our No. 1 priority and our *first line of operation* is support to GWOT. Since 2001, we have continually captured your lessons learned from Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), brought those back to our school, and used them to change doctrine and what we teach in preparing our Soldiers and units for war. It is a significant revolution from how we conducted business since the post-Desert Storm period. This revolution begins with you and all of your Soldiers who have been there and done that! I see three subrevolutions in supporting the GWOT: *training, support, and communications*. In the next two years, I expect to bring many of our revolutionary initiatives to completion.

**Training.** The first revolution is in training. If you have been to Fort Leonard Wood recently and attended any school from Basic Training to the Engineer Captain's Career Course or a functional course, you have experienced part of this change. We have immersed Fort Leonard Wood into a COE where scenario-based training is the standard. At the most basic level, our training maps reflect Arabic names and scenarios in all our training. The entire post replicates a combat theater. We have surged to construct eight military operations on urbanized terrain (MOUT) sites, including Iraqi villages; nine forward operating bases (FOBs); five shoot houses; and two convoy live-fire ranges and have modified numerous ranges to reflect the COE. More than any other school in TRADOC! Our convoy live-fire range, a realistic scenario-based

training opportunity for our trainees, replicates improvised explosive device (IED) and insurgent attacks. We have a weapons immersion program for our Soldiers, where they maintain their weapons with them at all times and learn the fundamentals of weapon discipline, just like our deployed Soldiers.

Another change you will find includes our initial-entry training (IET). The days of drill sergeants breaking down trainees and eliminating them immediately have passed. Drill sergeants treat everyone as a "Soldier from Day One." The focus is on maintaining the standards while using coaching, teaching, mentoring, motivating, and training to lift those who need a little extra time. This method has reduced attrition and kept young men and women in the Army who volunteered and have a desire to serve our Nation. At the same time, we have increased the rigor: five times as much field time, advanced rifle marksmanship, and total combat task focus in order for us to not just get Soldiers ready for their first unit, but to get them ready for combat!

In our Officer Education System, we have increased contingency training, integrated our transformed unit modified tables of organization and equipment (MTOEs), and significantly increased hands-on explosive hazards and IED training. This summer we will take Basic Officer Leader Course II and III into full implementation, and our new lieutenants will go to Fort Benning or Fort Sill to receive common-core training before arriving at Fort Leonard Wood for their functional training. We also have a new pilot course—the Joint Engineer Officer Course—which is an 80-hour course (distributed

learning and resident) to prepare our captains and majors to serve on joint staffs.

The most significant changes are in our functional courses. Before GWOT, we had only the Precommand Course and the Sapper Leader Course. Now we have 12 courses, including the Urban Mobility Breaching Course, the Route Reconnaissance/Clearance Operations Course (both mechanical and robotic), the IED Defeat Train the Trainer (IEDD T3) Course, the Advanced Search Course, and the Explosive Ordnance Clearance Agent (EOCA) Course. We are constantly evaluating requirements for additional training. At the same time, we are taking the critical tasks from our functional courses and inserting them into IET, the Advanced Noncommissioned Officer Course (ANCOC), the Basic Noncommissioned Officer Course (BNCOC), the Officer Basic Course (OBC), and the Captain's Career Course (CCC). This is a tremendous effort to better prepare and train our engineer Soldiers based on lessons learned in theater. These courses will be the foundation of how we train the force for GWOT over the next two years.

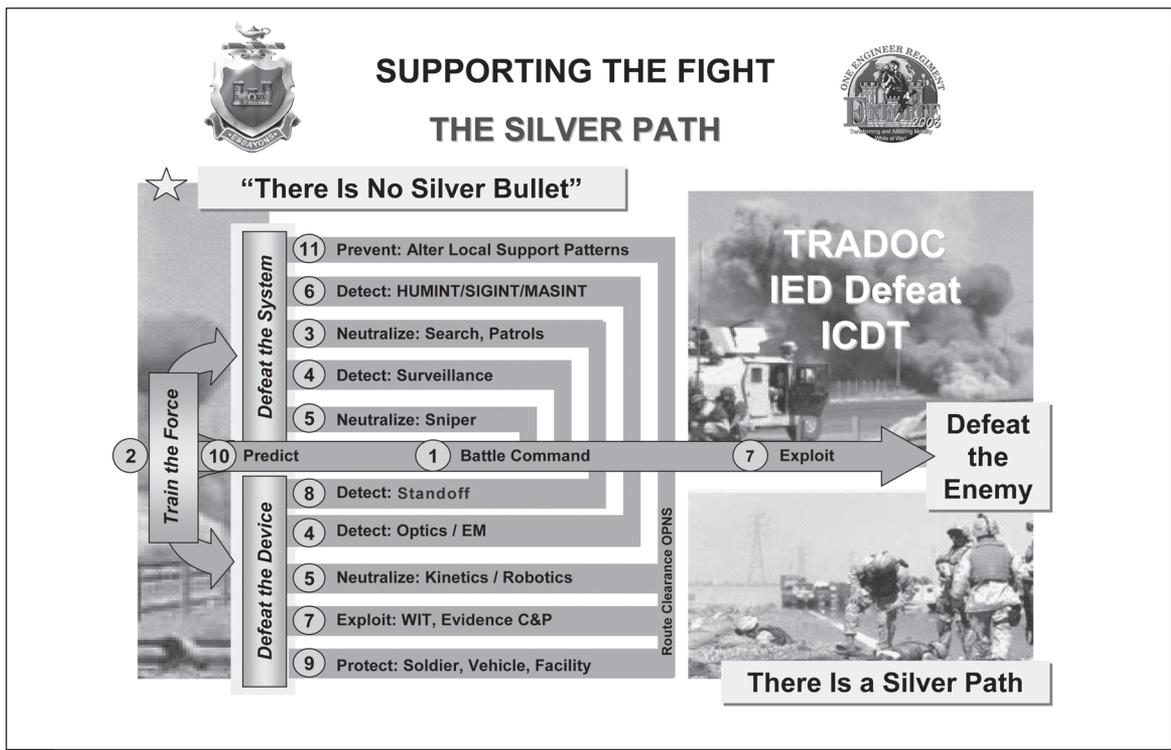
**Support.** The second revolution of supporting the fight has evolved significantly from pre-OIF to now. The Counter Explosive Hazards Center (CEHC) was established in 2002 to support a recognized gap in explosive hazards and work the doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) integration of these solutions. With the ever-increasing IED threat in theater, the Department of Defense (DOD) has recognized the need to rapidly train and equip the force with the skills and tools to predict, prevent, detect, neutralize, and mitigate IEDs for all deploying forces (assured mobility).

There are three major pillars of support to this effort:

- The first pillar is the TRADOC Integrated Capabilities Development Team (ICDT). Over the next two years, we will continue to play a critical role in this team, integrating the various school efforts to develop, teach, and integrate individual, crew, leader, small-unit, and functional training courses.
- The second pillar is the Joint Center of Excellence, which has the mission to support units as they prepare for deployment at the training centers and to provide combined arms training for these forces.
- The third pillar is the Joint IED Defeat Organization and Army Staff that will organize, develop, synchronize, and integrate solutions across the DOTMLPF spectrum for IED defeat in urban and complex terrain for DOD and the Army.

Together, these organizations will develop systemic processes to improve training and develop technological and materiel solutions to defeat IEDs and all counter explosive hazards.

These organizations realize there is no “silver bullet” solution to solve the IED threat and that this incredibly tough mission can only be accomplished in a system-of-systems approach. Our IED Defeat Task Force and the CEHC developed a Silver Path that looks at how we train the force to defeat the “device” and also defeat the IED system. The Silver Path takes the fundamentals of assured mobility as a framework and builds on it to improve our ability to exploit lessons learned and defeat the enemy.

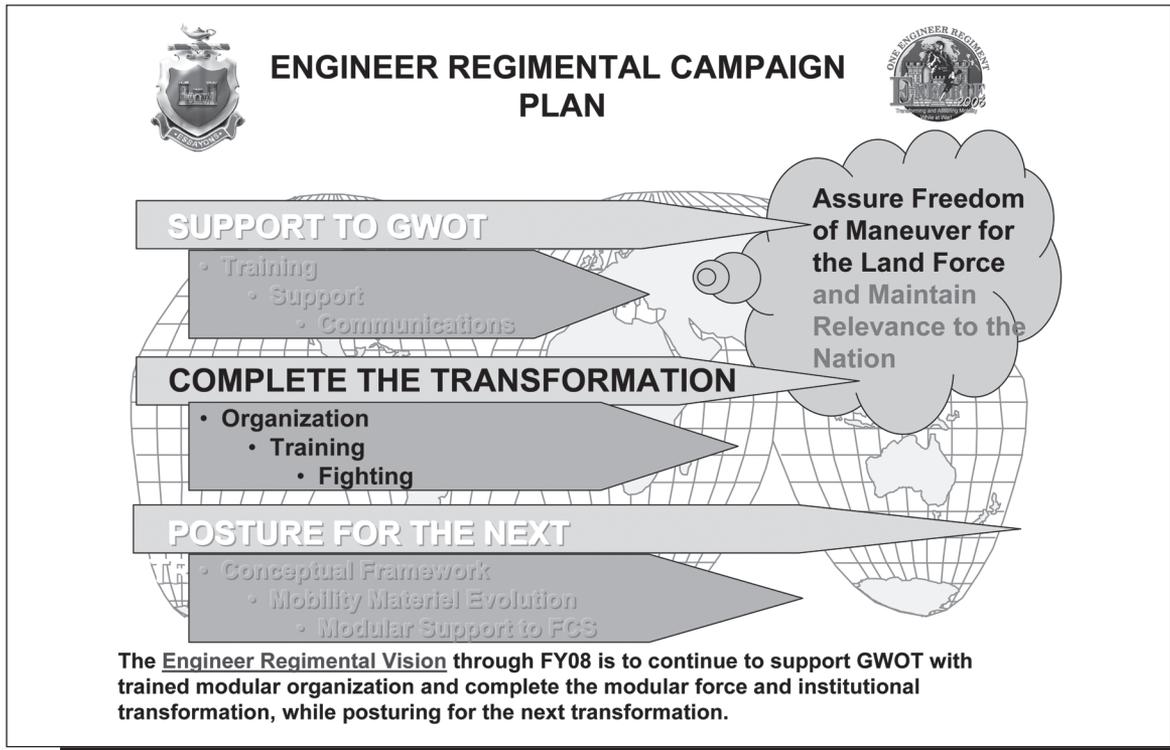


Integrating these lessons learned is absolutely the most important aspect of our functional courses and drives success on the core of our Silver Path. For example, the Advanced Search Course evolved from an identified gap in skills and tools for maneuver forces and engineers. The course teaches our sappers the latest tactics, techniques, and procedures for the conduct of area, route, person, and occupied and unoccupied building searches.

Another area where we are closing a gap is the engineer/explosive ordnance disposal (EOD) integration. Our engineer skills have changed focus over the years since Vietnam (booby traps), Desert Storm (mobility), the Balkans (mines/unexploded ordnance [UXO]) to now OEF/OIF (IEDs/captured enemy ammunition [CEA]). This broader spectrum of requirements and greater demands has developed a gap between EOD personnel and engineers. We are closing this gap with the EOCA Course, FMI 3-34.119, *Improvised Explosive Device Defeat*, etc. We have even exchanged officers and noncommissioned officers in critical positions between the Engineer and the Ordnance Schools. Over the next two years, we plan to close this

gap completely and seamlessly conduct operations with EOD personnel on the battlefield.

**Communications.** The third and final revolution is in how we communicate. I want us to truly change into a collaborative community in the next two years. In the past, the Engineer School talked to units via e-mail or telephone, the United States Army Corps of Engineers® used TeleEngineering Kits, and units talked in isolated conversations between commanders and their staffs. But today, we are establishing the Battle Command Knowledge System (BCKS), which is a collaborative Web site within AKO that allows you to converse simultaneously with your peers with recent experience or instructors at schools to discuss various subjects. It should be as easy as switching between your e-mail and another screen, allowing you to converse on any range of subjects that pertain to you or your unit. BCKS will allow us to tap into everyone simultaneously and to provide the ultimate reachback capability. Implementing these dramatic changes in our support to GWOT is essential but is also directly linked to our successful transformation.



## Complete the Transformation

**O**ur *second line of operation* is to complete the transformation. We began this journey a few years ago with an analysis of how we would transform as part of the Army's modular force structure. We took an offensive and aggressive look at modularizing the Regiment and reducing the number of MTOEs, military occupational specialties (MOSSs), etc., while identifying the critical engineer support requirements in the brigade combat teams (BCTs) and the engineer forces that would be force-pooled above the division level. This required a paradigm shift of how we would organize, train, and fight the Engineer Regiment.

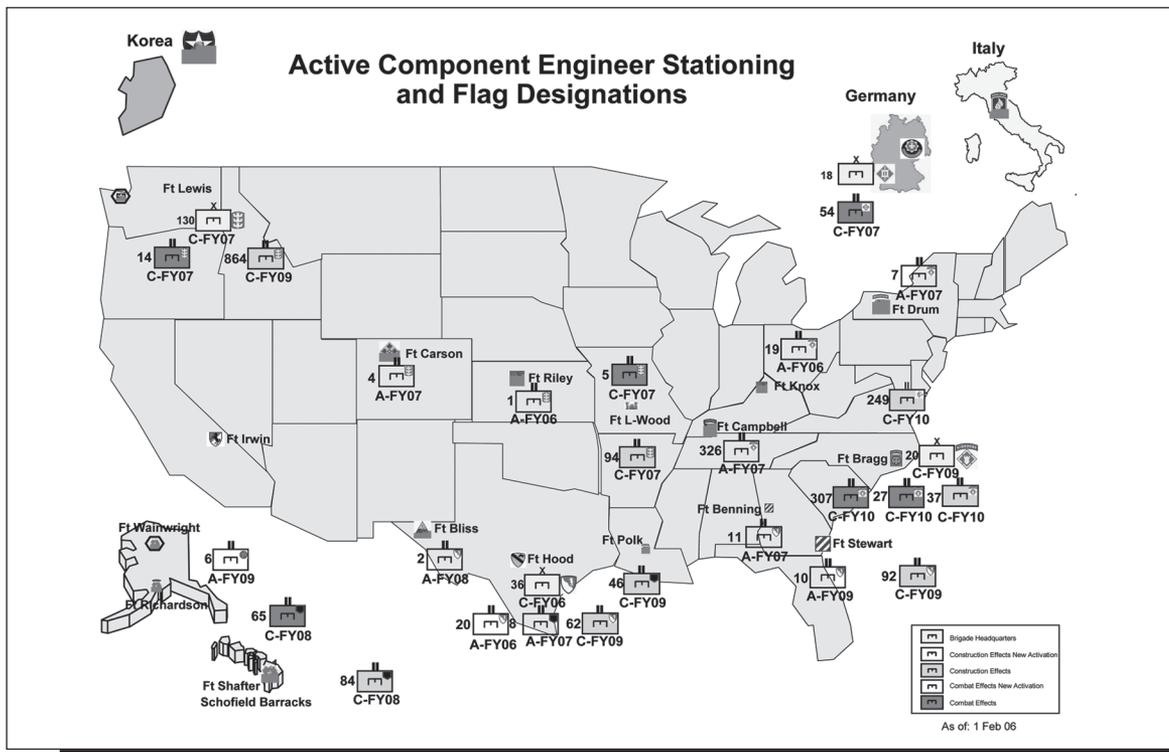
**Organization.** If you look at how we were organized before the transformation, you will see that the majority of our combat engineer battalions were embedded in brigades and divisions prepared to fight for a predetermined fight (symmetric or force-on-force). However, as we move through this transformation, our objective is to organize by embedding an engineer company in the BCTs and force-pooling the remaining engineers above the division for maximum flexibility in task-organizing for an undetermined type of fight.

**Training.** How we train will change as well. We will transition our collective training from METL focus to initially a modular capabilities focus.

**Fighting.** Finally, how we fight will evolve as well. We will go from fighting engineer companies with battalion-level

command and control to focusing on engineer mission teams (EMTs) and engineer mission forces (EMFs) (task-organized modules at the company level [EMTs], and task-organized modules and/or EMT engineer task forces [EMFs]). These units will be fighting independently or in support of BCTs and divisions. We will also shift from our two common scenarios of Europe and Southwest Asia to having the flexibility to not only fight any enemy, anywhere in the world, but also be able to task-organize ourselves for the particular requirement of the force.

When the transformation began, I explained to many of you that we would experience a trough because several of our engineer battalions and organizations would be temporarily reduced. During a two-year period, engineer units would inactivate, waiting for BCTs to stand up within the Army personnel constraints until they would activate again as a force-pooled organization. Your school house and FORSCOM realized that this did not make sense, and they have worked diligently to convert units sooner in lieu of inactivating and then activating them. We all know this is no small feat. The result is that we were able to move a handful of battalions forward into FY06 and FY07. In fact, we stood up two engineer battalions already in FY06 and will stand up five more in FY07. The result is that instead of waiting until 2011 to get our battalions back, most of them will be in place within the next few months. We will even come out of the transformation with more engineer company command opportunities than before the transformation!



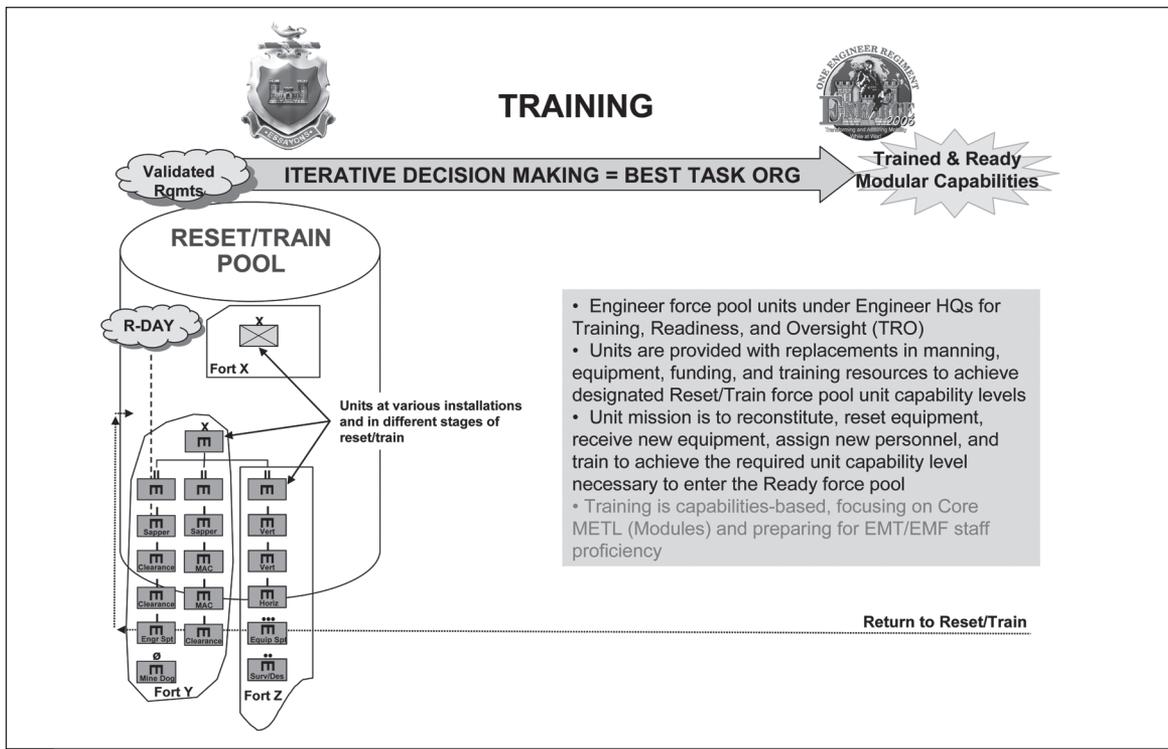
It has not been easy for this transformation to take place. As many of you know, we are trying to resource GWOT, transform units, and move organizations in accordance with Base Realignment and Closure (BRAC) requirements. Sometimes a unit gets caught trying to do all three. In response, the Engineer School has stood up a Fusion Cell to deconflict these issues. The Cell meets every Friday via telephone and video-conference with representatives from FORSCOM, Department of the Army, unit commanders, Army Materiel Command (AMC), etc., to work through their issues. It is working. We have a plan for all these Active Army units to transform in the next few years. But more importantly, the National Guard and Reserve have a plan that dovetails ours and complements capabilities and command and control throughout the Regiment. The National Guard transformation is led by the respective states, and the Reserve is led by the four Regional Readiness Sustainment Commands (RRSCs).

As these units come on line, we will see more of our modules being tailored for specific missions. Force-pooled engineer units will organize similar to the way maneuver company teams and task forces organize for specific missions. For example, an engineer brigade may receive a mission to perform a stability/reconstruction operation. The brigade commander assigns a battalion commander to take his battalion headquarters module to command and control a mission force. He provides him modules from other battalions that include a survey section, two horizontal companies, one vertical company, and a sapper company. We have now mission-tailored his organization into an EMF.

If you understand how this will occur, you will understand that the role of the engineer battalion commander at home station will be twofold: The force-pooled battalion commander will provide training, readiness, and oversight (TRO) for “training modules to excellence” and prepare his staff for fighting subordinate organizations as EMTs and EMFs. This will facilitate how we integrate into the Army Force Generation (ARFORGEN) process. Engineer brigade commanders will provide TRO over multiple battalions that may be stationed at other installations. By 2008, every force-pooled battalion and separate engineer organization will be assigned within one of our engineer brigades.

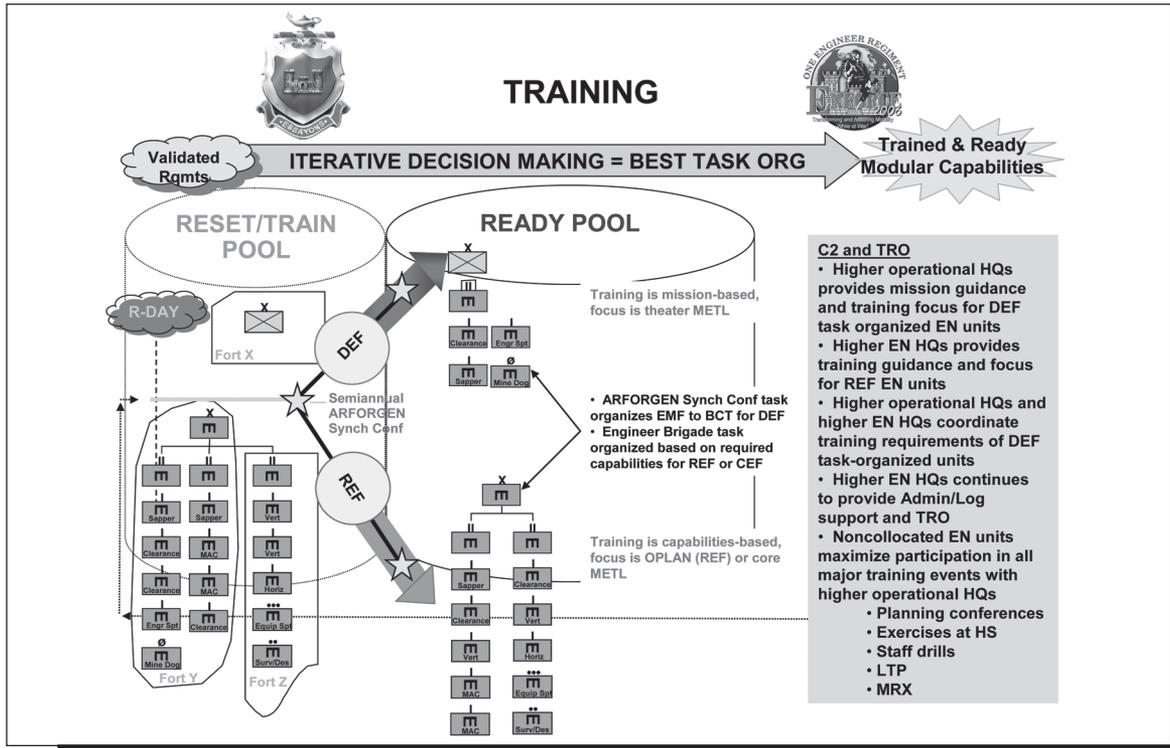
The ARFORGEN process is the objective. We are not currently organized in this manner, but that is the intent over the next couple of years. It is defined as *a structured progression of increased unit readiness over time, resulting in recurring periods of availability of trained, ready, and cohesive units prepared for operational deployment in support of regional combatant commander requirements.*

The way it will work is not difficult to understand. A unit starts in the reset/train pool. At this time, an engineer unit is force-pooled under a brigade headquarters. They will provide TRO of their subordinate engineer modules. Units during this phase will reconstitute, reset equipment, field new equipment, reassign and receive new personnel, and train. The training is capabilities-based, focusing on module METLs and preparing for EMT/EMF staff proficiency.



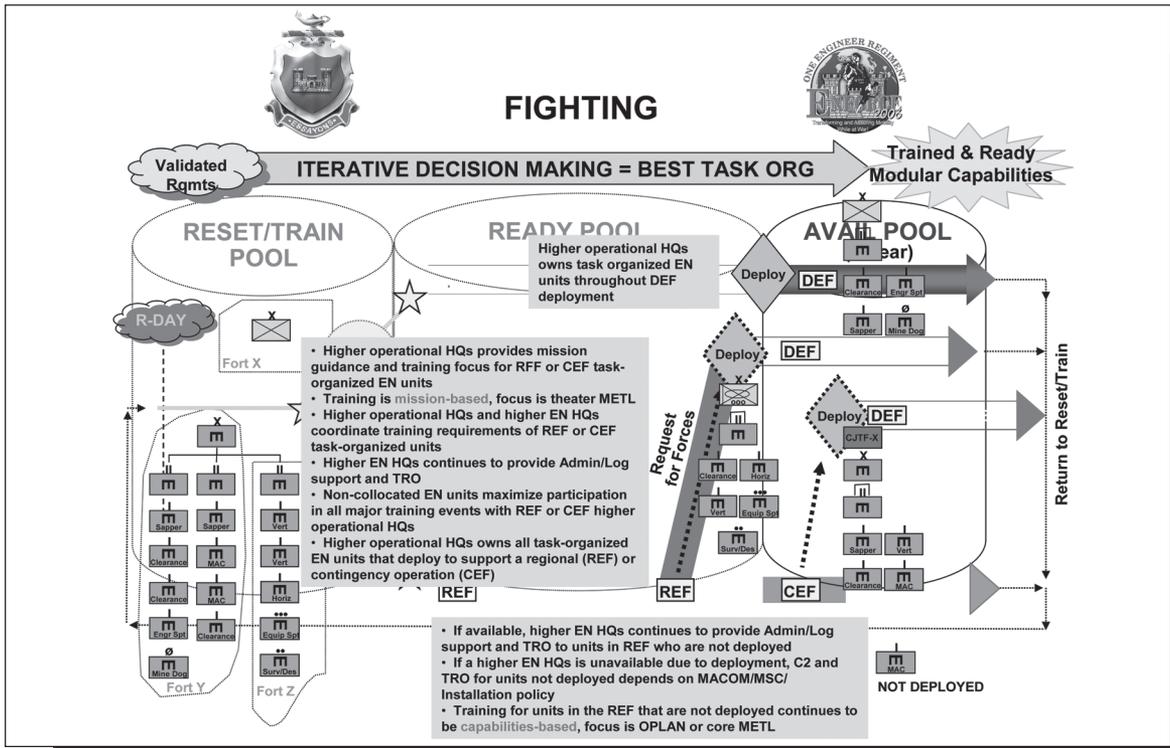
When units move to the ready pool, they will be assigned a specific deployment mission or be available as a ready force. The units assigned a deployment order will task-organize into EMT/EMFs and train with a focus on mission-based theater

METL. Engineer units will be tailored for the specific mission requirements. The ready units will continue to train, focused on capabilities-based requirements of an operational plan or their core METL.



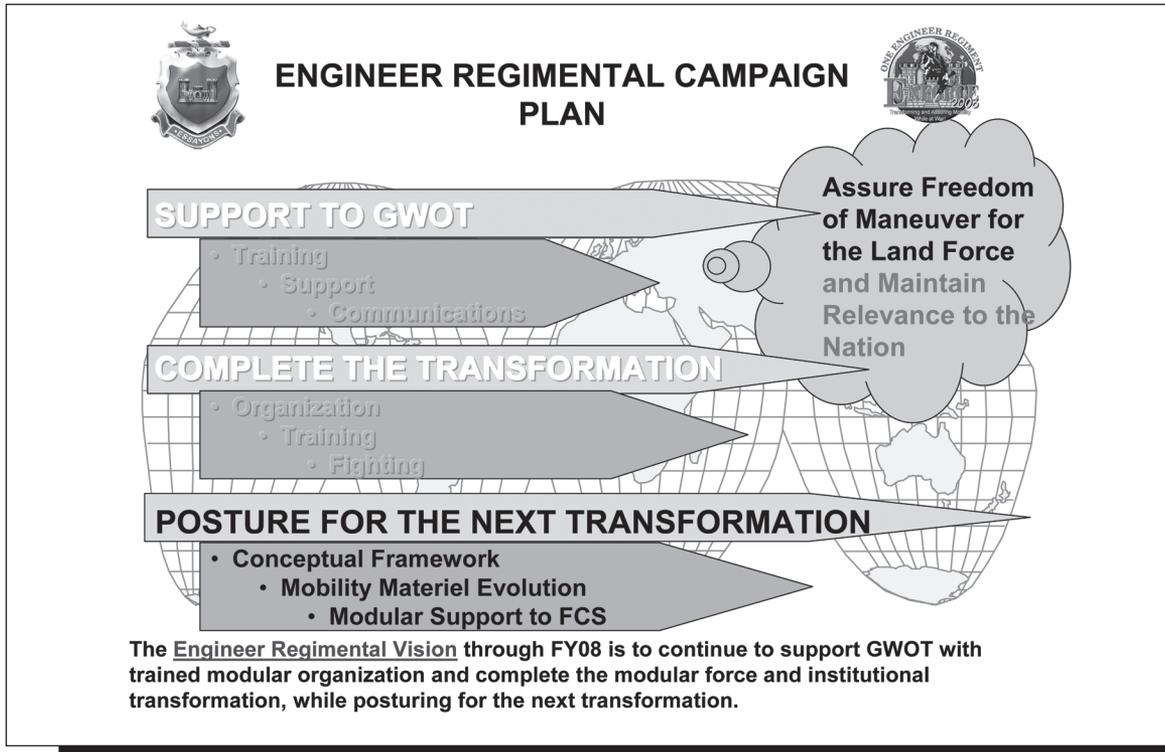
Finally, in the available pool, units with deployment orders will deploy and conduct their missions. The ready pool units may be task-organized for another deployment mission, sent on a contingency mission, or possibly not deploy but remain

in a ready pool. The process is cyclic and will maintain each unit at an appropriate readiness rate depending on where it is in the process.



To complete the transformation, we will continue to improve our materiel systems. We have a great team that has increased our Program Objective Memorandum (POM) FY08 to FY13 requirements to \$10.6 billion. This includes upgrades to our equipment and new purchases such as the Armored Breach Vehicle and the Joint Assault Bridge. Additionally, there has been a significant fielding plan for our route clearance missions. We have more than half of our desired end state of

seven route clearance companies fielded with Buffalos, Interim Vehicle-Mounted Mine Detectors (IVMMDs), and RG-31 Mine Protected Vehicles. Our construction equipment will be entered into the Service Life Extension Program (SLEP) and reset while we work to up-armor the fleet of Deployable Universal Combat Earthmovers (DEUCEs) and High-Mobility Engineer Excavators (HMEEs). This is the largest upgrade to the engineer fleet in decades!



### Posture for the Next Transformation

**T**he *third line of operation* is posturing for the next transformation. We must lead our Regiment in the direction of change.

**Conceptual Framework.** As we examine the direction of the next transformation, we see the Army poised to include the Future Combat System (FCS). The FCS is a highly integrated structure of manned and unmanned air and ground assets, bound by a distributed network acting as a unified combat ground force in the joint environment. The intent of the FCS organizations is to increase its capabilities within this network-centric structure so that forces can conduct their missions within a larger area of responsibility, operate on longer routes, and be proactive and optimized for offensive operations, all the while linked with a common operational picture (COP).

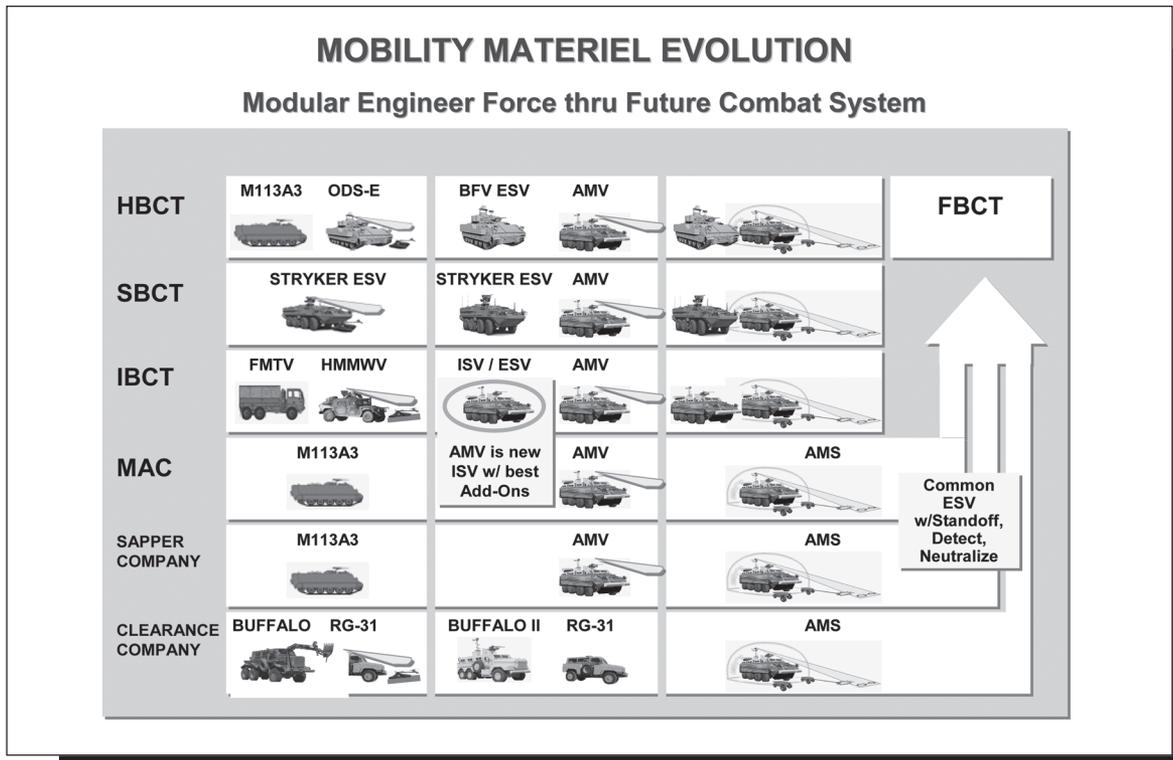
**Mobility Materiel Evolution.** The assured mobility framework will be just as applicable in these organizations as today. The imperatives and fundamentals will be the foundation for offensive operations. The way we will operate is not that complex. It is a system of systems that feeds information into a

single picture for all to see. Our higher headquarters and BCT assets will gather terrain data in the area of operations and report mobility impediments which will be reflected in the COP. Engineers will employ the intelligent mine system and other unattended ground sensors to extend the coverage area for updating the COP. The future Assured Mobility Vehicle (AMV) will operate embedded in BCTs and from the force pool, providing precision detection and neutralization, all the while continuously updating the COP.

The AMV will evolve from our current suite of assured mobility capabilities. Currently, our route clearance teams are a system. We have provided add-on component improvements and provided our sappers with additional add-on skills and tools. As we transition to the Modular Engineer Force, we will have dedicated clearance companies. We will spiral in GWOT technology improvements and continue to provide sappers with improved capabilities. When the Army begins to activate FCS BCTs, we anticipate that we will have a common engineer squad vehicle (the AMV) with standoff detection, neutralization, and marking capabilities integrated with all of the FCS information-sharing systems, making it the Assured Mobility System (AMS). Obviously, there are many technological

challenges, but we are making significant progress every day in these areas. Our goal is to field an AMV with all its capabilities inside the heavy brigade combat team (HBCT) engineer

search section within the next few years and have it throughout our Regiment's formations by 2015.



**Modular Support to FCS.** The FCS BCT (or future brigade combat team [FBCT]) will still have mobility capability requirements. These requirements include high-resolution geospatial terrain data, gap crossing (wet/dry > 4 meters), neutralization of hazards on- and off-route, neutralization of explosive and nonexplosive obstacles, emplacement of countermobility obstacles, force protection/survivability construction, and stability operations. The modules to support these requirements will come from three sources: division enablers, organic assets of the FCS unit, or the force pool engineer units.

Our Modular Engineer Force organizational design well prepares us for the future and our ability to support the FBCT. Our sapper companies, mobility augmentation companies (MACs), clearance companies, and engineer support companies will be key to providing engineer capabilities to this future force. Our task for the next transformation (FBCTs) is to modernize our materiel systems in these formations. We have already discussed the AMV and AMS; we will also need to develop a lighter assault gap crossing system—a lighter assault breaching vehicle. We will also select certain engineer modules and battalion headquarters to have habitual relationships with these new FBCTs and thus also receive their command and control communications suites.

So, for example, if you need to create an organization to provide high-resolution geospatial products, you can simply reach for a topographic company module or a geospatial

planning section. Or say you want to task-organize for stability operations, you could take a clearance company module, a couple of horizontal company modules, and a vertical company module to create an EMF to command and control this organization for stability operations. So what you discover is...we are already transforming to support the next transformation in support of the FCS. Other than continued technological advancements and improved survivability for our engineer equipment, we will continue to task-organize these modules for the foreseeable future. The majority of our force-pooled modules will provide the core of capabilities needed to support the FCS BCTs. These assets will be indispensable to the BCT and division commanders.

### Path to Success

I know I have covered a lot of material but...*Is this great or what?!!* The next two years look bright as we move along these three lines of operation. Each path is leading to success for our Regiment, thanks to YOUR efforts. We will continue to support the war and train the force based on your lessons learned. We will continue to complete the transformation and growing the new Regiment; all the while we will be postured for the next transformation. We are almost there! My thanks to all of you who are fighting the war, who are supporting the war, and who made ENFORCE a success this year!

Carry On!