The Countermine Center Forges Ahead

By Mr. Eric Johnson and Colonel Jeffrey P. LaMoe

"The enemy will fight asymmetrically. He cannot face us frontally and will come at us from the side and in the gaps he can find. My challenge is always loss of momentum. If I can keep momentum, he will stay off balance and have to fight my fight. The area where loss of momentum is always greatest is in crossing gaps and breaching complex obstacles. Any piece of ground that stops us takes away the initiative. A great challenge. Having an adequate countermine program is a level-of-confidence issue and one of our key responsibilities."

—General Eric K. Shinseki
Chief of Staff of the Army

Since Operation Desert Storm, U.S. military missions have spanned the spectrum of conflict. Those who oppose U.S. interests and objectives acknowledge that their forces would not survive a direct confrontation with our forces in conventional war. With U.S. involvement in a conflict, direct combat actions become less frequent as opponents disperse their forces and adopt tactics, techniques, and procedures (TTP) designed to offset our advantages. The effectiveness of this approach has been demonstrated repeatedly. In Chechnya, forces confronted with numerically or technologically superior opponents also realized that they must operate in complex terrain and urban environments to offset the advantages of their adversaries. Analyses reveal that our potential adversaries believe that denial of regional access can dictate the tempo of conflict to the U.S. disadvantage. Adversaries understand that if they attack our alliances and coalitions, they can delay the start of decisive operations and dictate the strategic tempo by frustrating U.S. and allied access.

The current force is trained, equipped, and organized to breach complex linear obstacles intended to shape the battlefield. The Army's countermine capabilities were developed to breach linear obstacles. With few exceptions, all current countermine equipment in our inventory employs one of three strategies: metal detection or mechanical or explosive "brute-force" neutralization. While this is a critical capability that must be maintained, recent experience in multiple operations demonstrates that there is a distinct need to *clear* mines from an area, not just breach.

The Army is not organized—and has very few organic assets—to detect and neutralize mines for area and route clearance operations. We cannot clear routes at operational speeds; technology will not support it. We must bridge the current countermine capabilities gap with commercial off-the-shelf (COTS) equipment to conduct operations in the contemporary operational environment (COE) for the Legacy and Interim Forces until countermine equipment that meets our required countermine capabilities is fielded to the Objective Force.

However, the COE—with adaptations by potential adversaries to offset U.S. advantages—is leading conflict toward nonlinear, simultaneous operations conducted throughout the depth of the area of operations, using conventional and unconventional means oriented on the destruction of U.S. national will and weakening international support. As in the attack on the Khobar Towers in Saudi Arabia in 1996, adversaries have added new depth to the battlespace. They have demonstrated that they clearly understand the political value of attacking soft targets when they are unable to achieve success in conventional operations.

In January 2002, the U.S. Army Maneuver Support Center (MANSCEN) began to establish a Countermine/Counter Booby Trap Center (CMCBTC) at Fort Leonard Wood, Missouri, as the "go-to" Center of Excellence for all things having to do with countermine.

The requirement for a CMCBTC is the result of the challenges presented by the extreme proliferation of mines, booby traps, and unexploded ordnance (UXO) in the COE. The challenges have been intensified by the employment of improvised explosive devices (IEDs), side-attack mines, and command-detonated devices. Potential adversaries have learned that they no longer have to achieve military victory; instead, a way to achieve success is to avoid defeat while inflicting casualties on U.S. and allied personnel. This is an effective way to attack political will and popular support for military operations. Demonstrated repeatedly over the last decade, taking hostages, using civilians as "shields," using mines as instruments of terror, and using IEDs for ambushes have proven very effective. From southern Lebanon to Oklahoma City, from the Balkans to Latin America, mines and explosive devices in the hands of renegades have been successful in making our superpower military feel helpless and ill-prepared.

The CMCBTC was created to help remedy the current shortfall in mine/countermine training that currently exists in the Army. The center's goals are to—

- Integrate, not duplicate, countermine and counter-booby trap doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) issues and solutions.
- Develop expertise in countermine and counter-booby trap techniques to detect and defeat booby trap and mine threats and enhance mobility and force protection in the COE.
- Maintain superiority in all facets of countermine warfare, including resident and reach-back technical capabilities.
- Focus the science and technology community on developing new technologies to counter the mine and booby trap threats that support countermine technologies for Objective Force assured mobility.

Today the CMCBTC is well on its way to establishing itself as a fully resourced Center of Excellence, which will become the recognized leader in countermine and counter-booby trap training and technology. The center will focus and synchronize aggressive countermine exploitation of present and emerging mine and explosive threats, enhance countermine inter-operability and hazard awareness with the combined arms, and develop DOTMLPF solutions and TTP for integrating newly developed or COTS equipment into countermine operations.

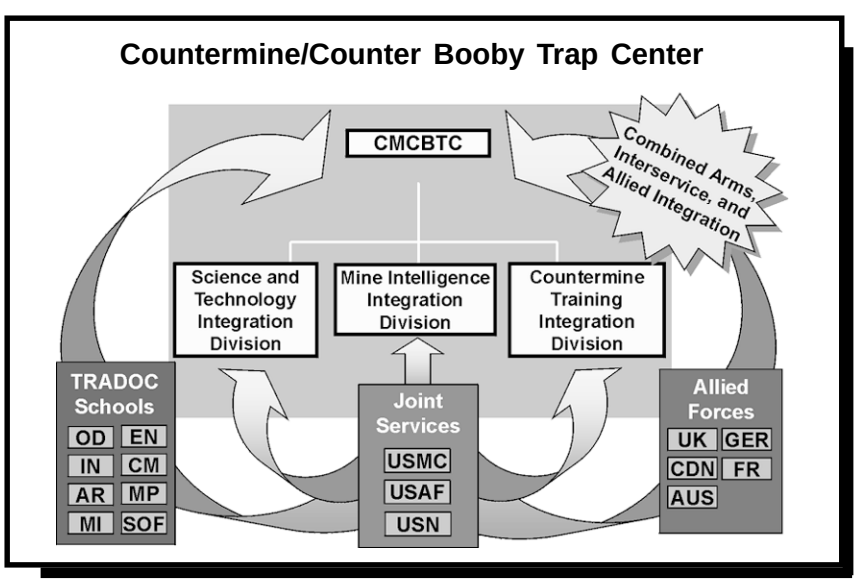
Many organizations are trying to help solve the explosive hazard problem; this synergy of effort did not exist previously. The focus of the CMCBTC's efforts this past year centered on interfacing and integrating countermine issues and solutions with other U.S. Army Training and Doctrine Command schools, allied forces, and joint services. This past year has also shown an increased awareness of the challenges in the countermine environment and initial integration of effort across branches, services, and Department of Defense agencies. The figure below shows the number and scope of organizations with involvement and interest in countermine.

The CMCBTC, working in concert with the MANSCEN Directorate of Combat Developments, developed a specification for a standard minefield database linked to Geographic Information System (GIS) tools to track and graphically display minefields and hazard areas. This effort, dubbed the Tactical Minefield Database (TMFDB), is being developed through the Topographic Engineering Center (TEC), Alexandria, Virginia—the government lead for the Maneuver Control System (MCS)-Engineer (MCS-E)—and Northrop Grumman, TEC's software development lead for MCS-E. The TMFDB will be forward-compatible with the beta release of MCS-E, which is scheduled for FY03.

The TMFDB resulted from urgent requirements emanating from Operation Enduring Freedom to develop a database of minefield and explosive hazard information. This initiative provides Coalition Joint Task Force 180 the ability to capture explosive hazard data and print georeferenced minefield maps and tactical decision aids to support the mobility and force protection of the force.

The TMFDB is relational, versatile, and customizable. The database will operate on a host unit's local area network, permitting near-real-time sharing of hazard data among U.S. elements. Friendly and enemy obstacles are assigned obstacle numbers based on the obstacle-naming convention in Field Manual (FM) 90-7, *Combined Arms Obstacle Integration*, and hazard locations will be displayed on tactical map backgrounds using color schemes and symbology shown in FM 101-5-1, *Operational Terms and Graphics*, and Military Standard (MILSTD) 2525B, *Common Warfighting Symbology*.

The TMFDB and GIS software can track and display point, linear, and area obstacles, minefields, and explosive hazards. Built as a subset of MCS-E, the application is being designed to interface with the command and control personal computer (C2PC) and MCS-Light and to input and output the minefield database to multiple formats (for example, the UN-approved Standard Information Management System for Mine Action [IMSMA]). The CMCBTC is presently demonstrating TMFDB capabilities to U.S. forces in Afghanistan and Kuwait.



The past year has been demanding for the CMCBTC Countermine Training Integration Division. The CMCBTC developed mine awareness, engineer-specific countermine and counter-booby trap training to prepare forces for Operation Enduring Freedom. The CMCBTC also trained more than 4,000 soldiers and qualified more than 100 instructors at Fort Leonard Wood and various other locations (eleven mobile training teams in the continental United States [CONUS] and three outside CONUS [OCONUS]). Recently, nine CMCBTC personnel were deployed to Germany, Kuwait, and Afghanistan for countermine predeployment and on-site training.

In addition, the CMCBTC—along with the National Ground Intelligence Center, Charlottesville, Virginia, and the Navy Explosive Ordnance Disposal Technical Center, Indian Head, Maryland— developed two handbooks that describe common explosive hazards, their doctrinal usage, recognition features, immediate action drills, reporting, countermeasure equipment, and TTP to deal with these threats. One handbook, which is titled *Land Mine and Explosive Hazards Reference Guide*, concerns Afghanistan. The second one is the *Soldier's Handbook, Land Mines and Explosive Hazards–Iraq*. The CMCBTC also developed a detailed Training Circular (TC) 20-32-5, *Commander's Reference Guide, Land Mine and Explosive Hazards (Iraq)*.

Our current practice, in response to urgent circumstances, does not fit the "train-alert-deploy" model; instead, it is "alert-deploy-train." We need to emphasize common soldier skills training in mine awareness, detection, avoidance, and extraction, and develop combined arms strategies across Battlefield Operating Systems. The CMCBTC proposes the five functional courses shown in the table below to enhance and integrate individual and combined arms skills and to ensure that we have requisite skill sets trained before deployment. Funding is needed to support the functional training courses until the FY05 budget submission establishes funds for a throughput of 400 students per course.

The U.S. Army requires a mine-detection-dog program to support Operation Enduring Freedom and the Objective Force and to reduce the risk to soldiers. Mine-detection dogs are the only tool we have to identify mines and explosive hazards based on the chemical odor of the explosives used in these devices.

In August 2002, the U.S. Army Engineer School Assistant Commandant briefed the Vice Chief of Staff of the Army and the Army Requirements Oversight Council on the school's solutions for dealing with the countermine threat. They approved funding for the Operation Enduring Freedom area and route clearance sets, but not a CONUS-based training set. Approved items include mine-clearing armor-protected (MCAP) dozers, berm sifters, medium flails, mine-detection-dog teams, flares, weight-dispersion boots, interim vehicle-mounted mine detectors, and mine-protected vehicles.

Included in the briefing was the establishment of a mine-detection-dog unit, which was approved and funded. After careful research, it was decided that the British Army can best train the baseline requirements the U.S. Army needs for its mine-detection-dog capability. The first squad and the detachment sergeant were transferred to Fort Leonard Wood,

Countermine Functional Courses

Course	Description
Countermine Course	Will provide joint service and combined arms leaders with an understanding of countermine operations and equipment and will advise commanders on force protection, area clearance, route clearance, and maneuver and attack missions. It will also train personnel on COTS and Legacy Force equipment.
Counter-Booby Trap Course	Will teach knowledge- and technical-based tasks that support detection, identification, marking, recording, reporting, extraction, and neutralization of booby traps on the battlefield.
Urban Breacher Course	Will provide individual training for Department of Defense and Department of Justice personnel. The course will teach advanced urban breaching operations, explosive theory, planning combined operations, safety issues, urban reconnaissance, employment of urban breaching assets, and breaching techniques for urban operations. It will also train personnel on COTS and Legacy Force equipment. We are working with the Marine Corps to exploit their current course (joint training).
Master Countermine Course	Will provide training to noncommissioned officers (E-7 and above) with battle staff qualification and officers (lieutenants, captains, and majors) to increase the planning capability of joint service and combined arms staff personnel in mobility tasks influenced by mines, booby traps, and UXO. The course will enable staff personnel to establish a mine information and coordination cell within an operational headquarters and advise commanders on all countermine TTP, including force protection, area clearance, and route clearance. It will also train liaison skills for operations with coalition forces, United Nations, nongovernment organizations, private volunteer organizations, and demining organizations.
Unexploded Ordnance Reconnaissance Agent Course	Will teach non-explosive ordnance disposal (EOD) soldiers to conduct initial procedures to mitigate the hazards of UXO, booby traps, and IEDs.

future home of the mine-detection dogs, and are awaiting orders to the United Kingdom for training. Training is expected to begin in May 2003. Training for mine dogs is 24 weeks long.

Mine-detection dogs give Army engineers an additional tool for countermine operations—a tool last used in the Army during the Vietnam conflict. Today's planned detachment will have an offensive capability similar to that of the Vietnam-era units. However, the threat today is very different and complex. Dogs have performed civilian humanitarian demining missions for more than a decade, but the U.S. Army requires more than just that capability. This new unit will be breaking ground with TTP and doctrine for the military countermine dog. In fact, this unit will be trying to advance procedures used by other armies. The U.S. Army mine-detection-dog unit will be the world's most advanced dog unit.

It will take almost three years to field this unit of 30 dogs. The time delay is because the U.S. military has no training capability for mine-detection dogs and will have to stand up a trainer base while the unit stands up. The British Army has a small training base and the CMCBTC will be taxing it to the fullest in support of our efforts.

The Engineer School is addressing the area clearance shortfall with updated doctrine, training support plans, and TTP and certified instructors to help train our Army for ongoing and future area clearance operations.

Mr. Johnson is the lessons learned researcher in the Countermine/Counter-Booby Trap Center, Fort Leonard Wood, Missouri. He holds a master's in computer resources and information management from Webster University in Saint Louis, Missouri, and is a graduate of the U.S. Army Command and General Staff College.

Colonel LaMoe is the Director of Training, U.S. Army Engineer School, Fort Leonard Wood, Missouri. Previous assignments include senior combat engineer trainer, Sidewinder 07, National Training Center, Fort Irwin, California, and deputy commander, 555th Combat Engineer Group, Fort Lewis, Washington. He holds a master's from Michigan State University and a master's in strategic planning from the U.S. Army War College.

Regimental Awards

Each year we recognize the best noncommissioned officer, lieutenant, and engineer company, in each of the components, for outstanding contributions and service to our Regiment and Army. Every engineer unit in the Regiment can submit the name and achievements of its best of the best to compete in these distinguished award competitions. Only the finest engineer soldiers are selected as recipients of these awards. They will carry throughout their careers the distinction and recognition of being the Engineer Branch's best and brightest soldiers and leaders. Following are the results of the 2002 Active Component Itschner and Grizzly Awards and Sturgis Medal selection boards:

The Itschner Award committee selected the U.S. Army Europe nominee—Company C, 9th Engineer Battalion (C), 1st Infantry Division Engineer Brigade, Schweinfurt, Germany, APO AE 09033—as the 2002 winner.

The Grizzly Award Committee selected First Lieutenant Michael White, Company A, 54th Engineer Battalion (C) (M), Bamberg, Germany, APO AE 09139, as the 2002 winner.

The Sturgis Medal committee selected Sergeant First Class Bradley J. Schneier, Company B, 54th Engineer Battalion (C) (M), Warner Barracks, Germany, APO AE 09139, as the 2002 winner.

All of the nominees represented their major commands with the highest professionalism and dedication to the Engineer Corps's vision and deserve our highest praise. The award recipients will be recognized at the U. S. Army Corps of Engineers Ball, tentatively scheduled for 23 October 2003.

For many years, senior leaders of the Regiment have debated about an appropriate award to recognize the very best engineer soldier, private through specialist. In keeping with the tradition of naming such an award after a distinguished member of the Regiment, the Regimental Command Sergeant Major, along with other senior sergeants major, recommended and gained approval for an award named after the most distinguished command sergeant major in the history of our Regiment—the fourth Sergeant Major of the Army, Leon Van Autreve.

The award is extremely significant for two reasons: first, it was created to recognize the most outstanding junior enlisted soldier of the three components of our Regiment as a tribute to one of our Army's greatest champions of welfare and care of soldiers and their families; second, it showcases and highlights the important and significant service our junior enlisted soldiers provide to our nation. They are truly our most valued resource, and we wouldn't be the Army or Regiment that we are without their selfless and dedicated service. The Van Autreve nominations will be submitted for FY03 and presented at ENFORCE 04.

Lieutenant General Robert B. Flowers
Chief of Engineers

Major General R.L. Van Antwerp
Commandant, U.S. Army Engineer School