THE PROFESSIONAL BULLETIN OF THE MILITARY POLICE CORPS

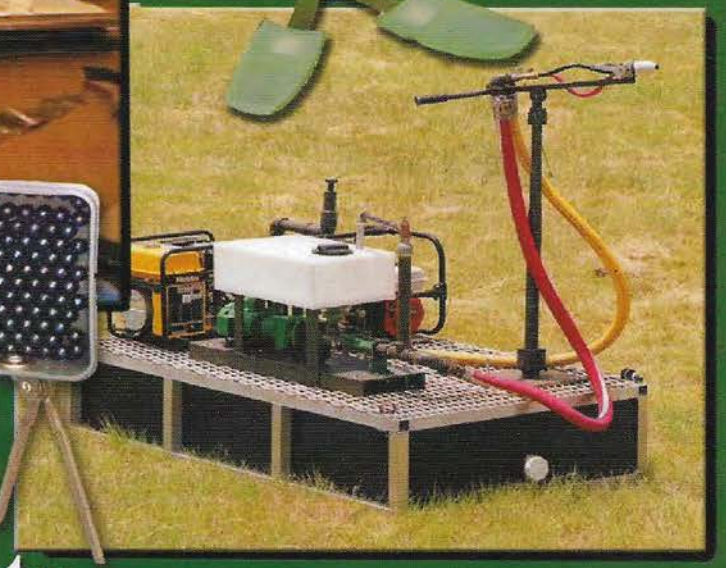
# MILITARY POLICE











## Nonlethal/ Scalable-Effects Weapons

HEADQUARTERS, DEPARTMENT OF THE ARMY
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PB 19-03-1, April 2003

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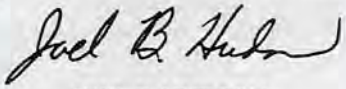
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0231313

*MILITARY POLICE*, an official U.S. Army professional bulletin for the Military Police Corps Regiment, contains information about military police functions in combat, combat support, combat service support, battlefield circulation control, area security, EPW, law and order, and rear operations. Approved for public release; distribution is unlimited. Objectives of *MILITARY POLICE* are to inform and motivate, increase knowledge, improve performance, and provide a forum for the exchange of ideas. The content does not necessarily reflect the official U.S. Army position and does not change or supersede any information in other U.S. Army publications. *MILITARY POLICE* reserves the right to edit material. Articles may be reprinted if credit is given to *MILITARY POLICE* and the author. All photographs are official U.S. Army photos unless otherwise accredited.

CORRESPONDENCE: Correspondence should be addressed to Military Police Professional Bulletin, 320 MANSCEN Loop, Suite 210, Fort Leonard Wood, MO 65473-8929. Please provide telephone number and complete return address. Telephone number is DSN 676-5274 or commercial (573) 596-0131, extension 35274.

SUBSCRIPTIONS: Individual subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9375. Telephone number is (202) 512-1800.

*MILITARY POLICE* (ISSN 0895-4208) is published semiannually at the U.S. Army Military Police School, Fort Leonard Wood, MO. Third-class postage paid at Fort Leonard Wood, MO, and additional mailing offices.

POSTMASTER: Send address changes to MILITARY POLICE, 320 MANSCEN Loop, Suite 210, Fort Leonard Wood, MO 65473-8929.

**FRONT COVER:** Various items from the Nonlethal Capability Set. For descriptions, see the article on pages 33-40.
**BACK COVER:** Mr. Scott Cheek, as the Dragoon, rides his horse, Son Dee Zippin, during the 61st Regimental Anniversary Week activities, September 2002.

# MILITARY POLICE

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# Chief, Military Police Corps Regiment, and Commandant, United States Army Military Police School

## *Brigadier General Stephen J. Curry*



Greetings from the home of the Military Police Corps Regiment! The first half of this year has certainly been eventful for the Regiment. The great majority of our Active Component MP forces have been or will be deployed, and our Reserve Component units and soldiers are certainly doing us proud with their significant contributions—some on multiple tours—to our contingency and force protection operations around the world.

It's a busy time, when we must rely on terrific leadership and effective training to keep our edge and continue our very important mission.

As the prospect of conventional conflict looms on the horizon, there is an aspect of warfare—nonlethal (NL) and scalable effects (SE)—for which the Military Police Corps has been given responsibility. This responsibility includes development of concepts, doctrine, materiel, and training for application across a wide range of operational scenarios and will be applied by all Army forces, not just Military Police. However, MP leaders and soldiers will be expected to be *the* subject-matter experts in the employment of these emerging NLSE technologies for the Army. For this reason, we have dedicated this issue of the MP bulletin to this mission to jumpstart your interest and inform you of the progress made thus far.

By way of a little history, on 1 October 2000, the United States Army Military Police School (USAMPS) was designated as the TRADOC single proponent for Army NL applications. As the Army proponent, USAMPS serves as the TRADOC single voice for all developments and initiatives to field NL capabilities. Since becoming the proponent, we have moved from a focus upon legacy, blunt-impact-type munitions, such as those currently contained in our Nonlethal Capability Set (NLCS), to exploring the efficacy of cutting-edge technologies in support of the Future Combat System and Army Objective Force formations. This new azimuth has taken us into the realm of SE technologies to permit a much wider application to the Army's emerging Objective Force fighting doctrine.

The Military Police School coordinates with all other Branch Schools and Battlelabs to ensure that NL issues are addressed and that resources are provided to support the short-term and long-term NL program. Additionally, USAMPS is the Army representative to the Joint Nonlethal Weapons Directorate, serving as the service representative to the Joint Integration and Coordination Group and Integrated Product Team, both of which address the joint NL program direction and spending plan. USAMPS coordinates, plans, and relies upon the Branch Schools to perform horizontal integration of NL doctrine, organization, training, materiel, leadership, personnel, and facilities.

I believe that you will find this issue of the MP bulletin particularly educational and perhaps even challenging. It's important that as the Army's experts on NL "effects," we continue to dialog and search for methods and capabilities to fill that gap between the absence of force and the application of lethal force. Our soldiers and leaders will increasingly call for NL capabilities that are practical, timely, and effective...it's our challenge to provide this capability for our Army.

Once again, I am constantly impressed by the "Hooah!" spirit I see and hear from all of our MP units and soldiers deployed and employed around the globe. The Regiment is proud of you, and your Army leadership is totally aware of your contributions during these critically trying times. Keep up the great work!

**Assist, Protect, Defend**

# Regimental Command Sergeant Major

## *Command Sergeant Major James F. Barrett*



It's hard to believe that more than a year has passed since I assumed the duties of your Regimental Command Sergeant Major. The time has passed with blinding speed. I have spent more than half of the last year traveling to our Regiment's units. I can say without hesitation that seeing our soldiers in action makes it easy for me to understand why we are known throughout the Army as the Force of Choice.

I can't think of a time in our history when our soldiers have been asked to do more than they are doing today. I am often amazed when talking to these great young men and women; their attitude, motivation, and pride are simply outstanding. Commanders and command sergeants major tell me continually that MP soldiers set the standard in everything they do. In fact, MP soldiers and noncommissioned officers (NCOs) won twenty-three soldier and NCO competitions throughout the Army last year, including the U.S. Army Training and Doctrine Command Drill Sergeant of the Year.

That pattern is continuing this year. Messages are already streaming in from across the Army, announcing that our soldiers are winning competitions at all levels. Just two weeks ago, it was announced that an MP drill sergeant was named Fort Leonard Wood Drill Sergeant of the Year and another of our drill sergeants was the first runner-up. These soldiers, along with all of our young men and women who quietly perform their duty every day, make me proud to be a member of this great Regiment.

Unfortunately, it does not appear that our pace will decrease in the near future. Our nation is at war. MP units in both the Active and Reserve Components will continue to maintain heavy deployment schedules in support of several operations and missions both in the United States and abroad. We, along with our families, will have to sacrifice; however, I am confident that we will answer the call just as we always have. MP soldiers will continue to earn their reputation as the Force of Choice in the best Army ever fielded.

In closing, I would like to wish every one of you and your families the best during these uncertain times. I also want to thank each of you and your families for what you have done, and will continue to do, for our country, our Army, and our Regiment.

**Assist, Protect, Defend**

*I can't think of a time in our history when our soldiers have been asked to do more than they are doing today....I am confident that we will answer the call just as we always have.*

# The U.S. Army Military Police Corps Regimental Hall of Fame Ceremony

*By Captain John R. Larson*

The Military Police Corps Regiment's Hall of Fame Ceremony was held at Fort Leonard Wood, Missouri, on 24 September 2002, during the 61st anniversary celebration. The Hall of Fame event is a time-honored tradition, distinguishing military police leaders, both military and civilian, for their contributions to the Corps and the nation.

A series of Hall of Fame events began with the commandant's luncheon, followed by the official induction ceremony. Over 400 soldiers and civilians attended the ceremony held in the Lincoln Hall Auditorium of the U.S. Army Maneuver Support Center (MANSCEN). During the ceremony, Major General (Retired) Paul M. Timmerberg was inducted by Colonel (Retired) Patrick R. Lowrey, and MANSCEN's Command Sergeant Major Mark L. Farley inducted Command Sergeant Major (Retired) Charles E. Joas.

This ceremony was followed with the traditional photograph-hanging ceremony in the Military Police Corps Regimental Museum's Hall of Fame wing. It was a simple event, attended by the honorees, their relatives, and some of their closest friends. The day's events ended with the anniversary celebration regimental review in which both inductees were again honored and joined Brigadier General Curry in the traditional inspection of the troops.



Nomination packets for the 2003 Hall of Fame selection board must arrive at the U.S. Army Military Police School no later than June 1, 2003.

## Hall of Fame Inductees—2002

### Major General (Retired) Paul M. Timmerberg

Service Career: 1949 to 1983

Major General Timmerberg's distinguished career spanned more than 34 years, including valorous service in combat and contributions that measurably impacted the Military Police Corps. While serving in Vietnam as the provost marshal, 1st Infantry Division, Major General Timmerberg was awarded the "V" device for valor (on his seventh Air Medal) for fearless

conduct while under direct ground fire and successfully averting the ambush of a convoy under his protection. On his second assignment to Vietnam, he received the Distinguished Service Medal for his inspiration and strict discipline in military police combat support missions. He successfully commanded from detachment to brigade, his career culminating at the rank of major general and commander of the U.S. Army Criminal Investigation Command (USACID). As the USACID's commander, Major General Timmerberg brought his command to a position of preeminence among law enforcement agencies worldwide. His outstanding wartime and peacetime leadership, loyalty, and heroic conduct make him a role model for military police throughout our Corps.



### Command Sergeant Major (Retired) Charles E. Joas

Service Career: 1969 to 1995

Command Sergeant Major Joas served his nation, the Army, and the Military Police Corps for 26 years. During his service, he made remarkable contributions to thousands of military police men and women by leading them to success and honor under very difficult circumstances. Command Sergeant Major Joas' innovative training of soldiers, groundbreaking employment of military police forces, and dynamic—yet caring—leadership style were evident throughout his entire career. During the invasion of Panama, as part of the provost marshal cell and 82d Military Police Company, Command Sergeant Major Joas participated in the only combat parachute assault by a military police company in history. He served as a battalion command sergeant major in both Saudi Arabia and Iraq during the Gulf War and as a brigade command sergeant major in Haiti during Operations Uphold/Restore Democracy. This outstanding leader, noncommissioned officer, and soldier is one of the key people responsible for establishing the positive reputation our Regiment has today. Command Sergeant Major Joas, through his actions and deeds, is truly one of the obvious reasons many senior leaders consider the Military Police Corps their "force of choice."



### Honorary Colonel of the Regiment

Brigadier General David W. Foley (Retired) is the Honorary Colonel of the Regiment. He is charged with representing all MP regimental soldiers—Active, Reserve, and retired. Important functions include carrying on and fostering the honor and traditions of the Regiment in ceremonies and functions, generally assisting, and perpetuating regimental history.



### Honorary Sergeant Major of the Regiment

Command Sergeant Major (Retired) Harold L. Burleson is the Honorary Sergeant Major of the Regiment and serves as the principal advisor to the honorary colonel. He assists and coordinates with the regimental command sergeant major to promote the lineage, honors, and esprit de corps of the Regiment as a whole.

# Emerging Nonlethal Weapons Technology and Strategic Policy Implications for 21st Century Warfare

*By Colonel Timothy J. Lamb*

*Generally, in war, the best policy is to take a state intact; to ruin it is inferior to this. To capture the enemy's army is better than to destroy it; to take intact a battalion, a company or a five-man squad is better than to destroy them. For to win one hundred victories in one hundred battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill.*

—Sun Zu, *The Art of War*

While technological advances continue to provide U.S. forces with decided advantages over potential adversaries, emerging nonlethal weapons (NLWs) technologies promise to provide additional military options to policy makers and commanders that were heretofore unthinkable, providing a strategic advantage to U.S. forces well into the 21st century. The potential impacts that the emerging NLWs technologies will have on strategic policy for future military operations are immense. These weapons possess the potential to carve out an intermediate position on the use-of-force spectrum that lies juxtaposed between the use of no force and the use of lethal force. NLWs present the United States with a potential strategic flexibility that no nation has possessed in the past but is increasingly possible due to potential future developments in nonlethal (NL) technologies.

More and more, U.S. forces find themselves facing a multitude of challenges in the highly complex and ambiguous 21st century global environment. Recent U.S. military operations have ranged from major combat operations and the defeat of Iraqi forces in the Gulf War and war in Afghanistan to present day small-scale contingencies such as peace enforcement operations in Bosnia-Herzegovina and Kosovo. Rapid developments in technology have done nothing to lessen the operational requirements to deploy our military forces into a variety of situations, placing "boots on the ground" as an act of American resolve and strategic necessity. This article examines current and proposed NLWs policy at the strategic level while developing and exploring future strategic policy implications for the United States.

## Searching for a Definition

Definitions regarding NLWs abound, and there is certainly no absolute agreement as to what constitutes an NLW or family of weapons. A workable definition is provided by the National Defense University: "Nonlethal weapons are characterized by their ability to disable or incapacitate people or things while minimizing physical harm to them, either because their effects are highly discriminate or relatively reversible."[1] In other words, very simply, it is the ability to temporarily incapacitate people, places, or things.

NLWs technology encompasses an array of categories of technology with widely differing uses and potential applications. These weapons are generally categorized into two groups: those that affect personnel and those that affect materiel. Though most potential NLWs technologies remain in the embryonic stage of development, the U.S. Army Training and Doctrine Command (TRADOC) has published a set of guidelines for the types of NLWs capabilities needed by the Army in the future:

> Nonlethal capabilities will affect human abilities/senses and materiel in order to disrupt or prevent normal operations. Nonlethal capabilities intended for use against personnel will have relatively reversible effects. It is the Army's intent to develop nonlethal capabilities that do not maim, permanently disable, or kill personnel.[2]

Required NL capabilities, as articulated by TRADOC, include the ability to affect both human and materiel systems. NLWs affect human capabilities through temporary disorientation, crowd dispersal, stunning of personnel, and sensory impairment. To defeat materiel systems, NLWs must blind optical sensors and targeting devices, disable electronics in equipment, prevent movement of vehicles, and cause computer-driven systems to fail.[3]

TRADOC also envisions additional capabilities other than direct attacks on people or combat equipment. For example, NLWs can be used to provide security and surveillance by enhancing tactical area security and

isolating adversaries. Additionally, a requirement exists to attack combat support systems and infrastructure, to include weakening or changing fuels and metals; disrupting utilities; and defeating modern materials such as composites, polymers, and alloys.[4]

NLWs represent a capability that possesses potential uses across the entire spectrum of warfare—a potential that will become increasingly relevant as we continue to move into the 21st century. The Army should develop this capability on a number of fronts, engaging technologies that have application across the spectrum of military operations. The timing is right (in support of the Future Combat Systems and Objective Force capabilities) to develop a significant NL capability. These nonlethal scalable-effect (NL/SE) capabilities will support a continuum of operations ranging from peace enforcement to major combat operations.

## Small-Scale Contingencies (Peace Operations)

A 1997 *Washington Post* story captured the essence of the violent and ambiguous type of operations that our forces face today and will most assuredly face again in the future. The story read in part:

> Brcko, Bosnia, August 28—Mobs of Bosnian Serbs, egged on by their hard-line leaders, hurled rocks and Molotov cocktails at U.S. peacekeeping troops today in an explosion of rage over U.S. and allied backing for Bosnian Serb President Biljana Plavsic.[5]

Should commanders have options that go beyond doing nothing yet fall short of using lethal force? Clearly, in the television age, policy makers prefer operations that are as bloodless as possible, yet still effective. This is particularly true when the object of a deployed force is to maintain equilibrium between former warring forces or implement a peace agreement (preferably without having to resort to force of any type and certainly not lethal force). As noted by Morris et al., "The ability to nonlethally overwhelm an enemy who is using lethal force has become a clear requirement for peacekeeping, peace enforcement, operations other than war, and military operations in built-up areas where minimum destruction of life and property are prerequisites for action."[6]

A clear trend in the post-Cold War era is the persistent phenomenon of "failed states." For example, the United States most recently has found itself involved militarily in Somalia, Haiti, Bosnia, and Kosovo. With the United States and other forces called upon to provide stability and order in these political vacuums, peace operations have proven to be highly complex and unpredictable. NLWs seem to be a permanent fixture supporting these operations.

The potential of NLWs in these situations was recognized by the Combined Task Force Commander of Operation United Shield, Lieutenant General (LTG) Anthony Zinni, when he decided to rely on NLWs to cover the withdrawal of UN peacekeepers from Somalia in 1995.[7] I'll now briefly examine the use of NLWs in operations in Somalia and discuss their possible future use in similar peace operations environments.

Based on experience, the planners knew that hostile groups could try to interfere with the withdrawal of forces from Somalia. LTG Zinni recognized that NLWs could help save lives and minimize the impact of a confrontation during this phase of the operation. Rapidly, the Marines identified off-the-shelf NLWs (and some that were in the developmental stage) to assist them in their operations. Following coordination with a host of governmental and nongovernmental agencies, they decided upon munitions which could be fired by weapons already organic to a rifle company (for example, an M203 grenade launcher, M-16 rifle, and 12-gauge shotgun).[8] The systems included the following:

- NL projectiles (beanbag rounds, rubber baton rounds, and rubber pellet rounds)
- Stinger grenades that disperse rubber pellets instead of metal shrapnel
- Sticky foam dispensed by an operator against an individual target
- Barrier foam resembling soapsuds but laced with an irritating gas[9]

The Marines trained with these NLWs while Pentagon policy makers grappled with legal and policy reviews. An effort was made to warn Somali clan leaders about their existence before employment; a briefing was also made to the press back in Washington. The weapons were not employed against the Somalis, as the operation went peacefully, leading some to believe the weapons played a major role in deterring violence.[10]

This experience with relatively low-tech NLWs presented a number of important lessons:

- There are significant shortcomings in the Department of Defense's ability to identify, acquire, and deploy NLWs. In particular, there is no unified process in place that coordinates the fragmented efforts in NLWs research and development.
- Since the use of NLWs was allowed only in situations where lethal force would be authorized, current U.S. military rules of engagement with respect to the tactical decision to use NL or lethal means need to be clarified. Thus, the Marines believed that NLWs could not be used readily to control escalation or to apply a graduated response to the threat.

- In training for operations other than war, traditional wartime skills, such as returning a high volume of fire immediately when fired upon, must be modified since there is a premium on restraint when using firepower and violence.
- A media plan must be crafted carefully and followed conscientiously by commanders and spokespersons, releasing sufficient information to deter but not so much that U.S. tactics could be defeated easily by a cognizant adversary.[11]

### Major Combat Operations

As technology continues to move forward, more and more capabilities will emerge with military applications that were once thought to be possible only in science fiction. Let us imagine for a moment what some of these potential capabilities might be:

> ...Strategic targets are attacked with a wide range of nonlethal weapons delivered using UAVs [unmanned aerial vehicles], stealth, and "smart" technologies. The targets include—power grids which are neutralized by disrupting them with carbon fibres released from cruise missiles; weapons of mass destruction (WMDs), such as biological and chemical agents which are sprayed with agents that form tough, hard coats over them; and radar and missile sites which are disrupted by electromagnetic pulses (EMP). Runways, roads, and rail tracks needed for military logistics and supplies are made slippery and impassable by Teflon®-type antitraction agents; fuel dumps are contaminated by bacterial agents that degrade the petrol and diesel; and computer systems are invaded by computer viruses that attack software programmes, and also by ultra-fine carbon fibres that short out and disrupt the computer hardware. Runways and roads are put out of action by dispersing four-spiked caltrops over them, which are cemented in place using hardening adhesives. Chemical embrittlement agents, which attack metallic components by weakening them and causing structural fracture, are applied to weapons and military installations. All these actions have the effect of denying military capability and degrading the military infrastructure.[12]

Is this a scene from a science fiction book or movie? Actually, the previous scenario describes NLWs technologies and capabilities that could be available in the future. The capabilities just described are consistent with possible future military applications and represent an entirely new way of looking at the potential of NLWs applied at the upper end of the conflict spectrum.

While the U.S. military does not currently possess all the technologies required to execute the operation depicted in the fictitious scenario, could we in the future? The answer is that the NL technologies described in the scenario, with sufficient funding, research, and development, are potentially possible. The larger question is, should we possess these capabilities in the future? And, if these technologies were to exist, would U.S. military capabilities be degraded or enhanced?

The military strategist Carl von Clausewitz, in his discussion of the political aspects of war, stated, "The political object—the original motive for the war—will thus determine both the military objective to be reached and the amount of effort it requires."[13] Political constraints upon military operations are nothing new. What is emerging, however, is the potential capability for significant military options beyond the juxtaposition of doing nothing and the use of lethal force. Even in major theater warfare, the NL option may make the most sense in view of the political restraints placed upon a particular military operation. The first Gulf War offers an excellent example.

Going into the Gulf War, it was apparent that excessive infrastructure damage and Iraqi casualties would be politically and militarily tricky. The political realities of a televised public blood bath and its impact upon strategic military operations were clearly recognized by the Chairman of the Joint Chiefs of Staff, General Colin Powell.

Despite all the firepower, anticipated swiftness, and violence, Powell had worked with General Norman Schwarzkopf to make sure the offense showed some restraint. Collateral damage had to be minimized. Of the half-dozen bridges inside the Baghdad city limits, the air campaign was, at Powell's urging, only going to hit two. Four would be left standing. Powell was convinced that it would not be in the U.S. interest to have a totally defeated Iraq with no capability to defend itself. So some of the Iraqi tanks and military would have to be left intact.[14]

While not suggesting that sufficient, usable NLWs technologies existed then (or even today), just suppose that the United States *had* possessed a technologically superior and capable NLWs arsenal to complement its already superior lethal weapons inventory. Following 100 hours of war, with the Iraqi army in full retreat, would the political decision have been to stop the war, or would the National Command Authority have had a more desirable option to switch to primarily NL technology while continuing to destroy Iraqi military capability in a politically acceptable manner?

Many today believe that the war was stopped short of truly destroying sufficient Iraqi military capability—a decision that was based largely on humanitarian concerns

and the politically unacceptable specter of media focused on the "highway of death"—the very public destruction of Iraqi divisions.[15] Emerging NLWs technologies could be applied to similar situations in the future.

Imagine for a moment how NLWs technologies could be applied in situations such as the termination of the Gulf War. With the application of antitraction technology, key escape routes (highways, key intersections, and railroads) are interdicted to slow or stop the mechanized retreat of a defeated army. EMP technology is used to disable field artillery and air defense artillery radar, missile-launch electronics, and vehicle ignition systems. A combination of NLWs systems using technology such as material embrittlement, adhesives, and combustion modifiers are used to disable enemy combat systems. The same is done for weapons storage facilities. Imagine that rather than having our engineers tediously blowing up huge enemy ammunition storage sites, we instead use NLWs technology to render them unusable; this same technology could be applied to aircraft sitting on the ground. All NL operations are conducted with the understanding that if units resist, lethal force is once again unleashed.

In the scenario just described, the political and military end state becomes the reduced combat capability of an enemy army in politically acceptable and militarily effective terms. There is evidence that in the first Gulf War, our senior civilian and military leadership chose to end the war as a result of humanitarian concerns and the fear of losing public support and allied support if the killing continued.[16] This is an excellent example of the all-or-nothing choices that policy makers are left with when lethal weapons are the only choice.

NLWs technologies possess the potential to become an important combat multiplier in major theater warfare. Their development and fielding to date has focused primarily on the low-tech end of the spectrum, with use in smaller-scale contingencies such as peace operations using Vietnam-era weapons as delivery systems. Future development should focus on selected high-tech options with applicability across a host of military operations as a key ingredient and component of Objective Force capabilities.

**Note**: This article is based largely on my strategy research project entitled "Emerging Nonlethal Weapons Technology and Strategic Policy Implications for 21st Century Warfare," which was written while I was a student at the U.S. Army War College in 1998.

**Endnotes**

[1]National Defense University, *Strategic Assessment 1996*, U.S. Government Printing Office, Washington, D.C., 1996, p. 152.

[2]U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-73, *Military Operations Concept for Nonlethal Capabilities in Army Operations*, 1996, Chapter 3, paragraph 3-3.

[3]Ibid.

[4]Ibid.

[5]Edward Cody, "Bosnian Serb's Backers Stone American Troops." *Washington Post*, August 29, 1997, p. 1.

[6]Chris Morris, Janet Morris, and Thomas Baines, "Weapons of Mass Protection: Nonlethality, Information Warfare, and Airpower in the Age of Chaos," *Airpower Journal*, Vol. IX, No.1, Spring 1995, p. 16.

[7]National Defense University, p. 152.

[8]Ibid.

[9]Ibid.

[10]Ibid.

[11]Ibid.

[12]Nick Lewer and Steven Schofield, *Non-Lethal Weapons—A Fatal Attraction?: Military Strategies and Technologies for 21st Century Conflict*, Zed Books, London, 1997, pp. 123-124.

[13]Carl von Clausewitz, *On War*, eds. Michael Howard and Peter Paret, Princeton Univiversity Press, Princeton, New Jersey, 1989, p. 81.

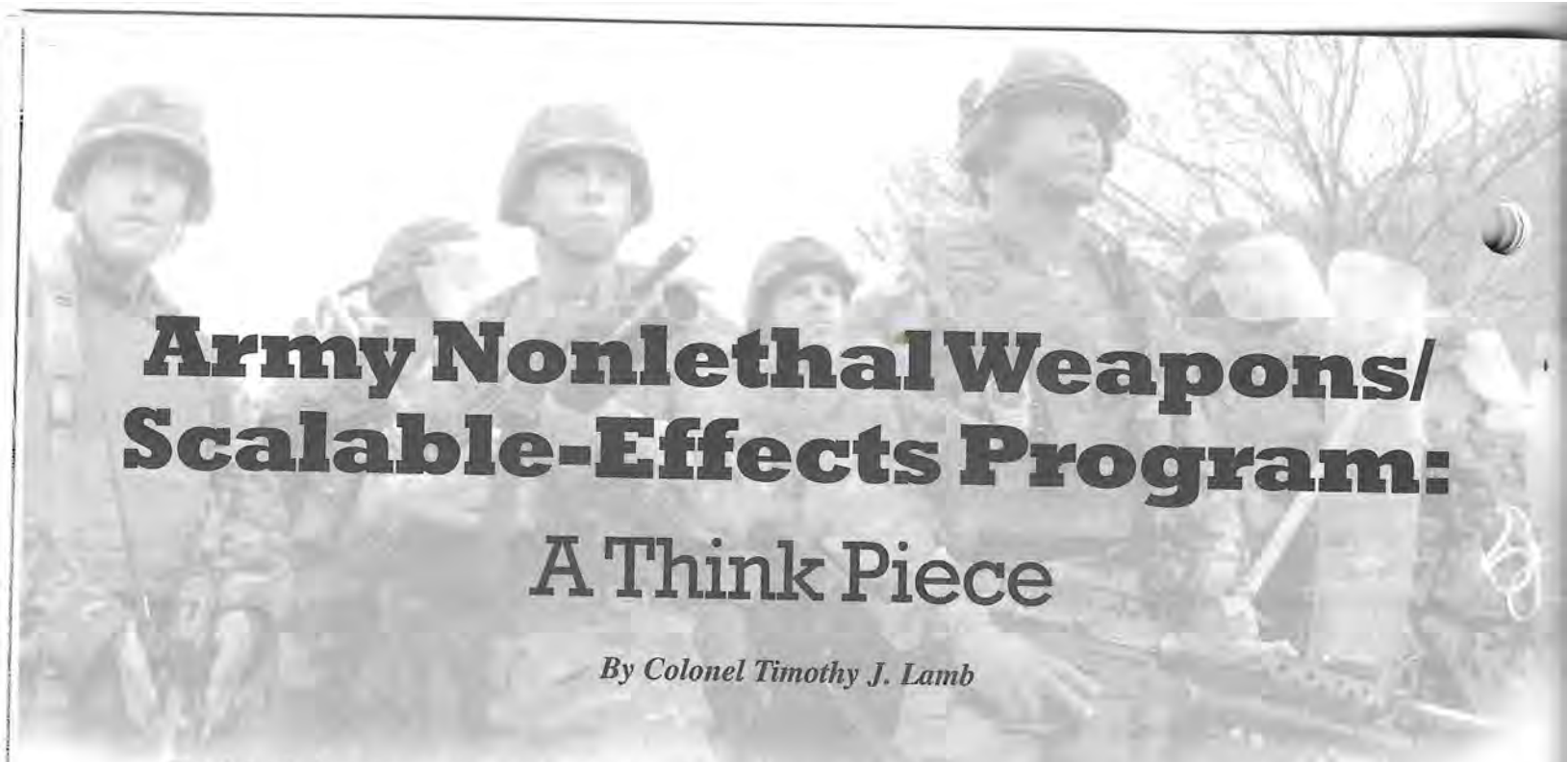
[14]Bob Woodward, *The Commanders*, Simon & Schuster, New York, 1991, pp. 373-374.

[15]Richard M. Swain, "Reflections on the Revisionist Critique," *Army*, August 1996, pp. 24-31.

[16]Ibid.

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PROTECT



# Army Nonlethal Weapons/ Scalable-Effects Program: A Think Piece

*By Colonel Timothy J. Lamb*

The Army's long-term strategy for the employment of nonlethal weapons (NLWs) requires true scalable-effects (SE) systems capable of fulfilling the Army and joint nonlethal (NL) core capabilities of counter-personnel, countermateriel, and countercapability. NL/SE systems will be employed across the spectrum of operations from small-scale contingencies (SSCs) to major combat operations by Objective Force line-of-sight (LOS)-, beyond-LOS (BLOS)-, and non-LOS (NLOS)-capable systems. NLWs, as modifications of existing lethal weapons systems, will evolve into true SE (lethal to NL) systems for use by Army Objective Forces. This ability to "rheostat" force and effect is revolutionary, but it will become an integral part of Objective Force capabilities.

## Nonlethal Weapons and Their Roles

The 1996 Department of Defense Directive 3000.3 defines NLWs as "Weapons...explicitly designed and primarily employed...to incapacitate personnel or materiel...[by] minimizing fatalities, permanent injury... and undesired damage to property and the environment." Their effects are relatively reversible but do not have a zero probability of producing either fatalities or permanent injuries. The critical point is that NLWs are not simply systems or weapons that do not "kill." They are specifically designed and built to deliver their effects against the prescribed targets (personnel or materiel) consistent with the mandates of Department of Defense Directive 3000.3.

The Army's approved 1996 Nonlethal Mission Needs Statement and the 2000 Joint Nonlethal Mission Needs Analysis/Mission-Area Assessment requires NL core capabilities for counterpersonnel, countermateriel, and countercapability missions. Joint Vision 2020, furthermore, also calls for a precision engagement capability for any situation capable of creating "the desired lethal or NL effects." An even simpler definition is the temporary incapacitation of people, places, and things. This is the proposed definition of NL/SE that the Army should use when pursuing Future Combat System (FCS) capabilities to meet future NL requirements.

## Where We Are

While the Army has fielded Nonlethal Capability Sets (NLCSs) composed of predominantly legacy blunt-impact munitions and protective gear, there is a clear need for a future capability that goes far beyond this current mix. A recent, informal survey of some combatant units was conducted to determine what capabilities they would want from new NLW systems. A summary of the results is presented here.

Personnel from the 5-20th Infantry (Stryker) suggested—

- Cordoning off areas with temporary, easily moved NL barriers to "channelize" hostile personnel mixed with noncombatants.
- Providing temporary, mobile antivehicular NL barriers (especially in military operations on urbanized terrain [MOUT]) or restricted terrain.
- Providing an SE weapon that could stun/incapacitate or wound/kill with the "flick of a switch."

Personnel from the 101st Airborne Division (Air Assault) mentioned—

- Clearing buildings (MOUT) without causing damage (rubble) or noncombatant casualties.

- Breaking contact with or extracting selected personnel from a crowd.
- Developing a family of NL access-control and area-denial capabilities.

Personnel from the 5th Special Forces Group thought of—

- Providing better blunt trauma/"stunning" NL weapons.
- Securing vehicles, resupply, and rendezvous sites when teams are operating away from vehicles.
- Incapacitating vehicles at a distance (1-3 kilometers) using electronic systems/alarms/booby traps; crowds, prisoners (with a small number of guards), humans, and animals (herders with sheep) at a distance of 0-1 kilometer from strategic recon sites; and personnel when breaking contact.
- Providing a "low (no) signature" ambush which incapacitates immediately, lasts for a "variable" duration, persists for a "variable" time, and covers "variable-sized incapacitation zones."

## Where We Need to Go

The Army's transformation effort is centered on the Objective Force, the centerpiece of which is the FCS with its LOS, BLOS, and NLOS SE capability. The NL/SE strategy has as its ultimate goal the delivery of a true, rheostatic SE capability for FCS platforms, crew-served weapons, and individual soldiers. This effort supports the defense planning guidance for the 2000 to 2005 and 2002 to 2007 time frames, in that the guidance cited the need for NL/SE from the tactical to the strategic levels while addressing the public demands for minimizing collateral damage and loss of innocent life "...while negating an adversary's exploitation of our rules of engagement." This new, indeed revolutionary, capability will represent a fundamental paradigm shift from NLWs suited for use in SSC situations against noncombatants to one in which NL effects are but one of the options available to commanders across the breadth of the operational spectrum. Delivering true SE weapon systems for the Objective Force will require time, money, and a focused effort to develop the technologies to meet the operational requirements.

A diverse range of capabilities is needed across the spectrum of conflict. They reflect the effect that the weapon will have on personnel and materiel. It is critical to combine the effect of a weapon and its delivery system into a single entity. The successful development of future NLWs systems must focus on both the effects and the delivery of NLWs. They must provide utility in multiple scenarios that will dictate a range of delivery systems and platforms consistent with the FCS and operational environment in which Objective Force units will find themselves (Figure 1).

Additional consideration must be given to determining the effectiveness of new systems. It is difficult to assess the utility of these systems when they are being compared to lethal weapons. Conventional assessment models rely upon kill probabilities that are not directly comparable to the effects desired when using NL systems. So one task that requires further investigation is developing effectiveness models that can relate the utility of NL systems in operational environments to measures of effectiveness. Figure 2 on page 12 shows the multidimensional problem that must be solved.

The primary role of the U.S. Army Military Police School (USAMPS) as the Army's proponent for NLWs is to focus the effort toward the desired FCS SE weapon systems. USAMPS must also work with the other proponent schools to coordinate NL science and technology (S&T) development efforts and, given the inherent nature of numerous users widely scattered over the country, help prevent unnecessary duplication of effort. This means that joint and Army research and development (R&D) efforts must expand to include increased support for promising technologies suitable

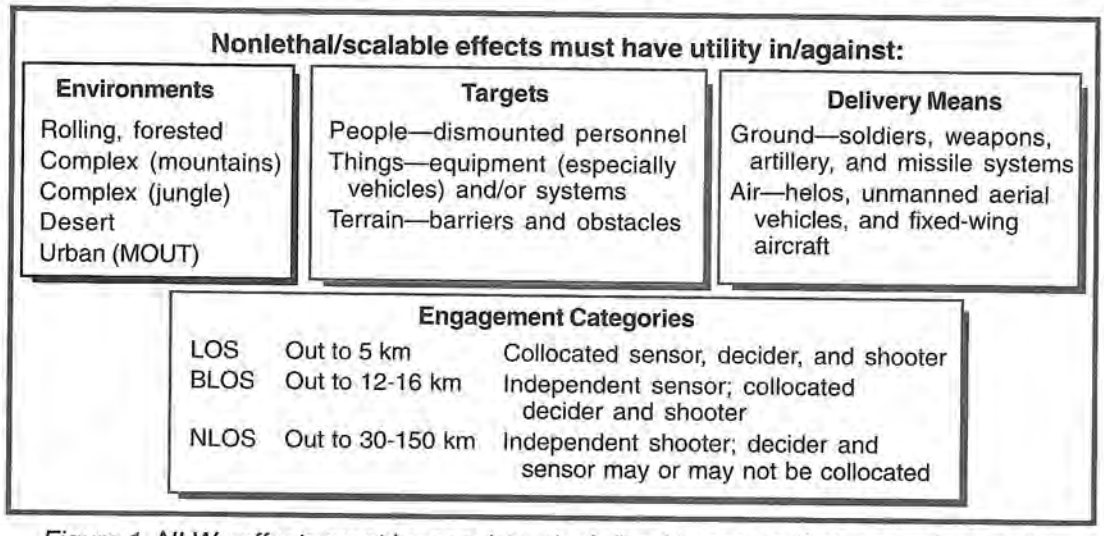



*Figure 1. NLWs effects must be consistently defined based on their operational utility.*

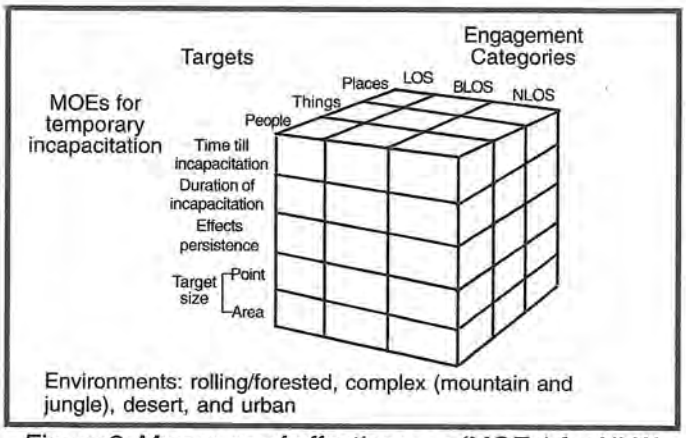



*Figure 2. Measures of effectiveness (MOEs) for NLWs depend upon a multitude of factors.*

for the Objective Force, as well as the SE capabilities that are suitable for employment by either the Legacy or Interim Force systems.

It is important that NL effects continue to be described properly in Objective Force requirements documents as these documents are developed and refined. Figure 3 shows the relationships of some of these key documents that are guiding the Army's transformation.

As the next generation of NLWs are defined and developed, these documents form the foundation from which the individual NLWs requirements must flow. We are currently cross walking these documents to develop a unified set of NLWs criteria. This is being coordinated through a U.S. Army Training and Doctrine Command (TRADOC)-sponsored NLWs Integrated Concepts Team (ICT) that involves all key stakeholders, including the U.S. Army Simulation, Training, and Instrumentation Command's program executive officer and headquarters Army players.

USAMPS also has a significant role as the TRADOC school responsible for the institutional training of key NL systems and doctrine. USAMPS must ensure that NL/SE employment; tactics, techniques, and procedures; and systems capabilities knowledge are fully integrated into the programs of instruction for courses comprising both the Officer and NCO Education Systems. Students in both systems' courses must receive instruction that provides them with a foundation of NL/SE understanding, including the likely situations in which they might be used and the capabilities of the NLWs systems currently in use—or to be fielded for use—by the future force.

Senior leader training should move beyond the current emphasis on providing information about NLWs to one emphasizing the benefits of NL/SE use in the current force structure in SSC scenarios, as well as the efforts to develop a more expansive capability for use by both the Interim and Objective Forces. Senior leaders must be made to understand that the dramatic shift for NLWs systems will occur when they expand from their current primary SSC employment options to their full potential as part of the FCS SE capability, suitable for use against both combatant and noncombatant targets.

## Resourcing the Effort

The Army's battle labs must be encouraged to prioritize and support promising NL/SE-oriented advanced technology demonstrators or advanced concept technology demonstrators. This also means that promising SE capabilities must be included as S&T objectives in the Army S&T Master Plan. SE-based defense technology objectives of both the Joint Warfighting S&T Plan and the Defense Technology Area Plan should be developed.

The Army's NL ICT—conducted semiannually at Fort Leonard Wood, Missouri—should be used by the participating Army proponents to submit (for consideration and further development) promising R&D or S&T candidates. School proponents are encouraged to document NL Objective Force requirements. The USAMPS assistant commandant, as the Army's voting principal to the Joint Nonlethal Weapons Directorate's (JNLWD's) Joint Coordination and Integration Group (JCIG), will carry forward promising candidates to the JCIG as a whole, with an eye toward obtaining JCIG's endorsement of the proposals for funding by either the Army or the NLWs Integrated Product Team (IPT) through the JNLWD.

As members of the NL ICT, proponents are also encouraged to submit their own R&D and procurement

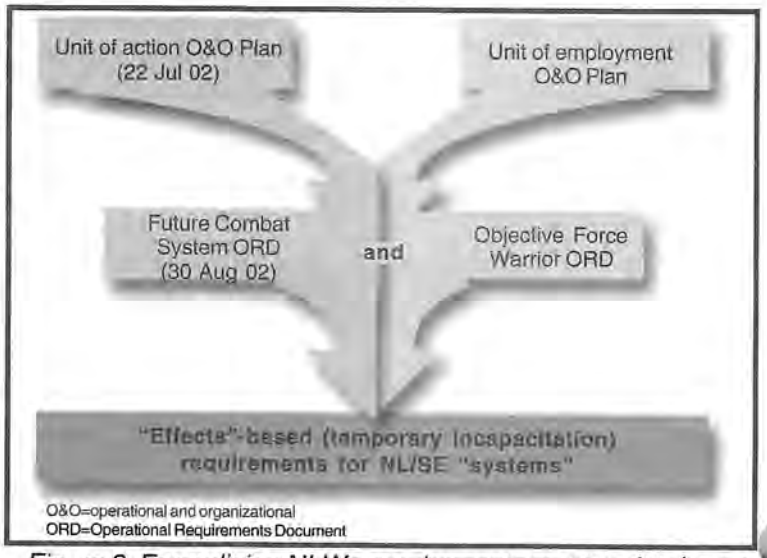



*Figure 3. Formalizing NLWs requirements must maintain consistency with the existing requirements of the Objective Force.*

funding requests. The JNLWD fully supports service-unique NL S&T funding with the development of the Objective Force FCS. Proponents must continue to develop their own unique NL/SE requirements capabilities (such as, NL mortar/artillery munitions and MK-19 NL) for use by Legacy, Interim, and Objective Forces. The result of all this will be a vigorous effort to develop the necessary technologies that meet the requirements of the FCS for an SE capability for the Objective Force.

The strategy is dual-tracked. The overall effort for the short- and midterm should concentrate on accelerating the development of more mature NL/SE technologies addressing identified deficiencies in the NLCS, even accelerating the efforts of the ongoing Joint NL Concept Exploration Programs for crowd control, area denial to personnel, and area denial to vehicles. In this way, the Army's NL/SE efforts will support the needs of its current and Interim Forces until the Objective Force SE systems—the second track of the NL development strategy—can be brought online.

**Summary**

The focus of previous NL efforts has been the development and fielding of NLWs to meet the needs of units and commanders deployed in SSC situations. NLWs clearly have demonstrated their value and utility from Haiti to Kosovo, Panama, and Guantanamo Bay The key deliverable of this effort was the development of the NLCS, a prepackaged set of items, including NL munitions, that could be issued to an entire platoon, giving it everything it would need to fulfill its mission in an SSC environment.

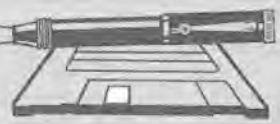
Short- and midterm efforts will be oriented toward rounding out the NL capabilities already fielded and bringing to fruition distinctive, proponent-based NLWs requirements (for example, NL mortar). The roles of the NL ICT, separate Army proponent schools, and the JCIG's recommendations to the NLWs IPT establishing priorities for R&D by the Army and the JNLWD and to support procurement funding in the program objective memorandum, are absolutely essential in ensuring that the Army's NL strategy receives the appropriate resourcing and prioritization.

Future efforts must now be focused on the Objective Force's FCS with the deliverable being a true SE capability. FCS SE requirements must be cross-walked to those of the Objective Force warrior, ensuring that individual soldier SE capability is present in the Objective Force. The NL ICT shall serve as the forum for presenting promising SE-based technologies for consideration and further R&D either by the Army, under the auspices of the battlelabs (for example, advanced technology demonstrations, advanced concept technology demonstrations, the Concept Experimentation Program, and limited-objective experiment), or by direction and support of the NLW IPT under those of the JNLWD.

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*This article was written in close collaboration with and cooperation from members of the USAMPS and TRADOC NLWs staffs and the Close Combat Armaments Center, Tank-automotive and Armaments Command–Army Research, Development, and Engineering Center. Colonel Lamb is the USAMPS assistant commandant and represents the Army as a voting member on the JCIG, JNLWD.*

## Letters to the Editor



# Attention!

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# Nonlethal Weapons Requirements Definition—
## *A Difficult Task Requires a True Team Effort*

*By Mr. Kenneth P. Yagrich*

Nonlethal weapons (NLWs) seem to be the ideal solution to many of the difficult problems confronting U.S. forces in a wide variety of engagements throughout the world. They offer the promise of accomplishing a mission while exercising maximum restraint; however, they have not come close to their true potential because we simply do not know enough about them. We all know that the current blunt-impact or kinetic-energy weapons represent mature technology, but how close are we to having "phasers set to stun"?

We talk about incapacitating the bad guys, but does that mean "quiet" them down or "put" them down? What are the possible situations in which NLWs might be useful in tactical situations? Much is written about acoustics and other advanced energy weapons, but why have we yet to see these new, potentially useful technologies? These are complex questions that are comprehensively addressed in a soon-to-be-released report by the National Research Council. For this discussion, let us concentrate on one major NLWs issue—effects and effectiveness.

No matter what the circumstance, when using any NLW, the bottom line is that we want the person or persons being targeted to stop what they are doing and instead do what we want them to do. There are scores of scenarios and numerous terms—such as delay, deny, distract, and dissuade—used to describe these requested behavior changes. To accurately assess if NLWs can accomplish behavior change, three actions are necessary:

- Experiments must be conducted with objective data collected to support any judgments regarding the effects of any nonlethal (NL) device or system.
- Experiments must take human response into account, since human behavior under these circumstances (those in which NLWs might be used) involves unique characteristics that cannot be determined through animal responses.
- Desired behavior change must be stated in simple, measurable terms such as stop, go away, or stay away.

The basics of scientific experimentation (problem definition, data collection, and problem examination) determine if behavior changes address the initial problem and if the experiment has been adequately completed. To date, this has not been adequately performed for NLWs systems.

This is, of course, a highly simplified representation of the situation and is presented only to make a point. In reality, NL device and system users are confronted with a wide variety of specialized environments and circumstances that normally fall under the general categories of counterpersonnel, countermateriel, and countercapability. Users need to know exactly what the NLWs will do under varying circumstances and with multiple uses.

It must also be known how NLWs will affect the users, if their use can be varied to suit different situations, and if they are simply useful enough to be operationally significant and cost effective. The range of use is so wide that without some knowledge of the potential capabilities of various NLWs, it is impossible to write meaningful requirements for those systems. It is suggested that without more knowledge of what is possible, it is more appropriate to think of user needs in terms of "desirements" rather than rigid requirements, permitting enough flexibility to deal with the problem. This is hardly adequate to proceed with weapon systems development and procurement.

The solution to this problem can be achieved through the analogy of a three-legged stool (see figure). One of the legs represents a wide array of technical capabilities (such as energy-on-target) provided by the developers. A second leg represents the effects (behavioral responses) developed through specific experimentation. The third leg represents utility; that is, that useful response that can be achieved as recognized by the user. All three are needed to support the seat of the stool which represents the requirement for a NLWs system. If one leg is missing, the stool topples.

It follows that information on all three is needed to evaluate the overall effectiveness of the proposed device. Much experimentation is being done to quantify pain, but the true measure is the behavioral response elicited in the targeted individual or individuals through whatever pain has been generated. By using this approach, individual differences in pain tolerance are mitigated and performance metrics (such as "stop" and "go away") can be applied. The tools and capabilities to implement this methodology are represented by a new initiative within the Advanced Energy Armaments

Systems Center (AEASC) at the Armament Research, Development, and Engineering Center (ARDEC) at Picatinny Arsenal, New Jersey.

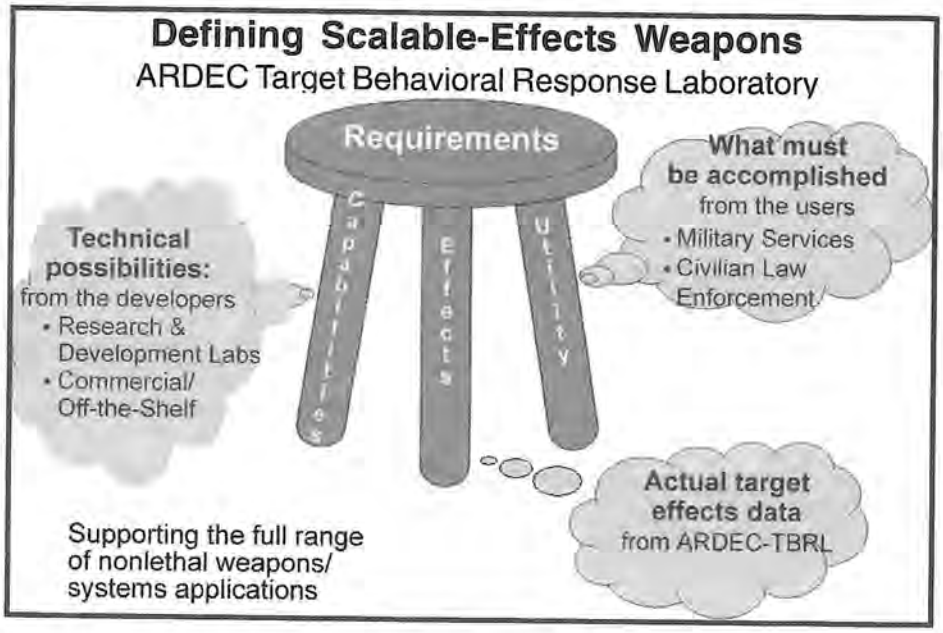
The AEASC's role is to seek out, understand, and implement new types of weapons systems that create "scalable effects," ranging from very mild to near lethal, without permanently damaging or injuring materiel or personnel targets. A principal element of the AEASC is the target-effects group that will identify and characterize all types of effects and perform experiments to verify those effects.

On the personnel side, the Target Behavioral Response Laboratory (TBRL) has been created at ARDEC to obtain data on responses that can be elicited through a wide range of existing and new energy sources. A grant has been provided to the New Jersey Medical School, in collaboration with the Department of Veterans Affairs New Jersey Health Care System, to use toward creating the Stress and Motivated Behavior Institute (SMBI). The main purpose of the SMBI will be studying target suppression.

While the AEASC and the TBRL study effects across the entire engagement spectrum, there are definitely many operational scenarios where NL applications would be effective. The potential effectiveness of such scalable systems within the full tactical spectrum has yet to be fully realized due to the lack of effects data.

The TBRL project is designed to work as follows:

- Determine the degree to which various types of energy inputs have the potential to produce target suppression.
- Demonstrate which programs are useful and should proceed.
- Conduct direct laboratory experimentation, collecting data and verifying that reliable, robust effects can be elicited.




- Experiment with prototype systems under realistic conditions (at the ARDEC lab), emulating operational situations and simulating weapon systems, thus demonstrating that useful effects can be achieved.

This experimentation is to verify that the overall effectiveness and user desires have been translated into proper system requirements. At such time, operational requirements documents can be prepared and ARDEC may build a small numbers of systems.

ARDEC has two ongoing programs—one for blunt-impact munitions and one for a flash-bang grenade with light and sound. Also, there are five pilot programs in which the possible effects of various forms of light, sound, microfog, and ultrasonics will be initiated (in combination and on their own) in fiscal year 2003. It is hoped that once information demonstrating that certain effects are possible is obtained, requirements and weapon proposals will follow.

All the components of this methodology are available to assist with programs in varying stages of development, particularly where efforts are being made to develop requirements documents for NL systems. Analyses of true user needs, when coupled with explanations of the behavioral responses possible, can be extremely useful in determining system requirements and avoiding requirements that are not testable.

The simple key to success is remembering that developers, assessors, and users must work together closely (particularly during the early stages of defining needs) to successfully enable NLWs systems development. This type of cooperative effort will ensure that user desires are properly identified and translated into reasonable requirements for tactically useful systems that can be economically built and widely used.

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*Mr. Yagrich is the coordinator for target effects and effectiveness for Advanced Energy Systems for the Quality Engineering Directorate at ARDEC. He has more than 30 years experience testing and evaluating a wide variety of conventional and nonconventional weapon systems. For the last ten years, he has concentrated on nonconventional incapacitating mechanisms and various NL systems. He holds a bachelor's in mechanical engineering from Lehigh University. He may be reached at kenneth.yagrich@us.army.mil.*

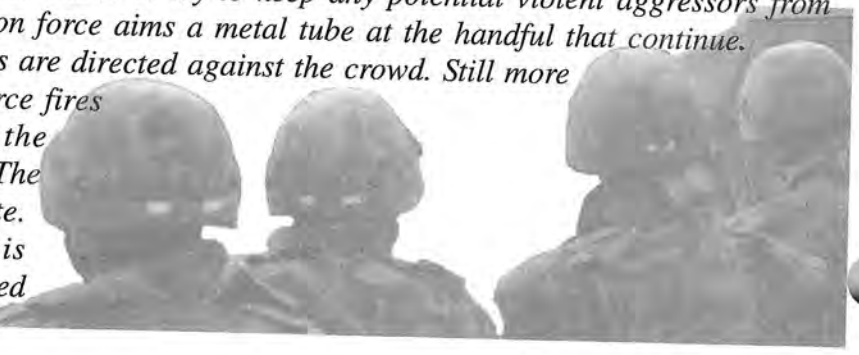
# Nonlethal Capabilities of the Future

*By Lieutenant Colonel Arthur J. Aragon Jr.*

This article was taken from an article that was originally published in the September-October 2001 issue of *Army AL&T*—the Acquisition, Logistics, and Technology magazine.

*It is 2014. A U.S. contingency force patrols the buffer zone between two warring factions while peace negotiations continue. This small buffer zone is one of many that divides two ethnic groups that have recently unleashed a war on each other, destabilizing the region. Each side of the buffer zone is visibly marked, and warning devices extend nearly 2 kilometers out. After several weeks of quiet, an event sparks a large crowd to form in a nearby town. Suddenly, the crowd begins moving toward the buffer zone. Unmanned aerial vehicles (UAVs) and robotic sensors forward real-time video and information to the U.S. command node near the buffer zone. The crowd is visibly armed with rocks and sticks and ignores all posted and remote voice warnings. A pickup truck, loaded with yet more demonstrators, accompanies the crowd. The contingency force responds quickly. When the crowd is about 1,500 meters out, the U.S. forces send out additional voice warnings from the UAVs over wireless public address systems. The crowd ignores the warnings. U. S. forces lob several nonlethal (NL) mortar rounds just in front of the advancing crowd. The rounds burst overhead, delivering their payload at about 1,000 meters from the buffer zone.*

*The area just in front of the crowd is covered with what appears to be fine gravel. The crowd hesitates, a few individuals turn back, but most, seeing no evident threat, proceed as the voice warnings continue. The U.S. contingent points a small antenna from its primary robotic combat system at the moving vehicle; the vehicle suddenly stops and cannot be restarted. The occupants get out, some continue, others turn back. The remaining crowd, on reaching the area covered by the NL mortar rounds, steps on microencapsulated malodorants that break open, emitting an awful smell. As the crowd moves over the "gravel," many demonstrators stop, some continue, and dozens turn back! Special sensors set at 1,000 meters send back data to the command that indicate that among the handful of remaining demonstrators, there are likely a few concealed small arms. The U.S. commander wants to try to keep any potential violent aggressors from getting within small-arms range. A reaction force aims a metal tube at the handful that continue. Intense aversive sounds and flashing lights are directed against the crowd. Still more demonstrators turn away. The reaction force fires an invisible burst of energy that hits the remainder of the individuals like a punch. The few individuals that remain now dissipate. The crowd has been dispersed, no one is seriously injured, and no demonstrator reached within small-arms range of the buffer zone.*



## Current Methods

The preceding vignette is just one of a countless number of potential situations for our future Army. In fact, much of the scenario could play out today. However, today's NL response would be considerably less capable. Currently, beyond the warning devices described, and even with sophisticated sensors, our forces could not reach beyond 100 meters to start impacting the crowd or its vehicles with NL capabilities. The fact that we can now reach several meters farther than a riot baton says a lot for the achievements in NL capabilities over the past 5 to 6 years. We have rubber-ball ammunition and barriers that have been effectively used in the past couple of years. However, whether it is rubber balls impacting against humans or barriers that must directly contact vehicles to impede movement, close range and contact are required to execute today's NL effects.

## Future Technologies

NL capability may one day simply be a selector switch on the individual armament of the soldier or provided by dialing up the desired effect (from distract to destroy) on a munition. Until then, the Army, along with the other services, is exploring various technologies to provide NL capability for the coming years. NL capabilities for the Army's Objective Force will need to range farther, be less potentially lethal, and give the user a "kit bag" of capabilities well beyond today's rubber balls and barriers. Some of the potential technologies were mentioned in the scenario above and include aversive acoustics, directed-energy countermateriel weapons, and NL fires.

The Army, in conjunction with the Department of Defense's Joint Nonlethal Weapons Directorate is looking at various NL capabilities for the near future. The Army is also seeking funds to develop NL capabilities specifically for its Objective Force and Future Combat System (FCS). Engineers and scientists, working with users and materiel developers, are investigating capabilities beyond present close-range rubber balls. A related part of this program is the development of a mortar round that can disperse NL payloads without the container itself being a dangerous falling object. Parachutes and frangible casings are technologies under consideration by developers to achieve this capability.

The microencapsulated malodorant described in the scenario as the mortar payload is one of many types of NL payloads being considered among the services to try and optimize NL payloads with delivery systems. NL long-range delivery remains a technologically challenging area because each type of payload affects each perspective munition and delivery system differently. One way to possibly address this is through microencapsulation. Microencapsulation is a means of packaging malodorants or other products in very small balls or beads with various levels of protection and consistency. This makes storage, shipping, and weaponization potentially more feasible.

Another potential technology described is aversive acoustics. Aversive acoustics are directed sound waves that are so annoying that they will cause most people to want to leave the area where the sound is directed. Think of dozens of fingernails against dozens of chalkboards! Combined with other sensory depravation devices such as bright flashing lights, this could cause even the most ardent demonstrators to wavier in their mission. A big advantage to such technology is that it provides a "deep magazine" and minimal logistics! You have unlimited rounds as long as you have vehicle power, and you don't have to worry about ammunition storage.

## Vehicle Stoppage

The scenario also describes disabling a vehicle from a distance. Vehicle stoppage and countermateriel weapons remain high-priority missions of force protection for commanders throughout the world. Current methods of vehicle stoppage require physical contact with a barrier, tire shredders, Jersey barriers, etc. They usually also require hand emplacement or close proximity of an operator. Future countermateriel capabilities will likely be directed-energy weapons that optimally disable materiel from hundreds of meters without causing permanent damage. They could be remotely operated, reusable, and adjusted to affect different targets from vehicles to command and communication nodes.

One of the NL capabilities not addressed in the scenario, but one that has stirred much interest, is the use of NL fires. This approach incorporates long-range delivered munitions and submunitions to incapacitate vehicles, computer equipment, and other infrastructure without destroying them. However, these munitions could be "rheostatic" or tunable, and with the flip of a switch on the munition itself or the fire control system, you set the previously NL weapon to destroy. This not only offers flexible response but also reduces the logistical burden of having to carry, store, and maintain many different types of rounds.

## Conclusion

Many mature, relatively low-cost, NL capabilities are now or soon will be available. Some are deployed and have been successfully used in actual operations. In addition to participating in the Joint Nonlethal Weapons Program (JNLWP), each service also has its own

service-unique NL requirements (i.e., FCS NL for the Army and NL vessel denial for the Navy). JNLWP participants recognize that future NL science and technology investments are required to reach beyond today's rubber balls and physical barriers. Future NL capabilities will need to be more flexible, have a longer standoff range, and offer potential long-term cost savings as compared with current capabilities. Until that day when we can simply "set phasers to stun," the Army and the other services will continue to press technology for NL solutions.

*Lieutenant Colonel Aragon is currently the deputy director for the U.S. Army Information Systems Engineering Command's Technology Integration Center at Fort Huachuca, Arizona. When this article was originally published, he was the assistant project manager for NL and demolitions for the Program Manager, Close Combat Support.*

## Army's Best MP Back From Balkans

*By Ms. Nicole Dowell*
*Reprinted from the* Army News Service, *January 8, 2003*

The 549th MP Company, Fort Stewart, Georgia, won the Brigadier General Jeremiah P. Holland award for excellence among Army military police companies. The 1st MP Company, Wurzburg, Germany, was first runner-up; and the 25th MP Company, Schofield Barracks, Hawaii, was second runner-up.

The 549th MP Company won the Forces Command Eagle Award, earning them the title of best military police company in U.S. Army Forces Command, prior to being considered for the Holland Award. Each major command may submit one award nomination each fiscal year. Units submit a packet that details their achievements in areas such as training, physical fitness, retention, weapons qualification, quality-of-life improvements, community volunteerism, and family-support programs.

"Creating a nomination packet ... takes a tremendous amount of work and creativity," said Captain William H. Poole, the 549th company commander.

During fiscal year 2002, the 549th carried out law enforcement operations on Fort Stewart, maintained training and readiness, conducted vehicle and weapon maintenance, and deployed to Bosnia for six months.

"We're prepared for any type of mission," said Sergeant Robert Johnson, a team leader in the company. "With the size of our post and the missions we have, we are on top of our game." Johnson attributed much of the company's success to its leadership, which he said is superior.

"It's a tribute to the NCOs in the unit," Poole said. "Great squad leaders translate to successful missions."

The 1st MP Company, Wurzburg, Germany, demonstrated mission successes this past year, bringing it first runner-up honors. It supported the 1st Infantry Division, V Corps, and U.S. Army Europe in Kosovo and Turkey, in addition to deployments to Hungary and the Czech Republic.

The 25th MP Company, Schofield Barracks, Hawaii, won second runner-up with successful missions supporting SFOR-11 in Bosnia and acting as the protective service detail for the commander, Task Force Eagle. A three-man team from the company won first place at the 2002 MP Warfighter Challenge at Fort Leonard Wood, Missouri, distinguishing itself as the best team in the MP Corps.

Brigadier General Jeremiah Holland, an MP officer, sponsored this award after his retirement in 1969 to promote esprit de corps and professionalism among MP units. The award honors the most outstanding active-duty Army MP unit, company size or smaller.

"The soldiers, NCOs, and officers of the 549th MP Company are truly honored to be recognized as the best of the best in the MP Corps and stand ready to perform all future missions," Poole said.

(Editor's note: Ms. Dowell, a Department of the Army intern, compiled this information with contributions from Specialist Katherine Robinson, a staff writer for the Fort Stewart *Frontline* newspaper.)

# The Picatinny Arsenal Story: Nonlethal Capabilities

*By Mr. John Cline*

The U.S. Army Tank-automotive and Armaments Command's Armament Research, Development, and Engineering Center (TACOM–ARDEC) at Picatinny Arsenal, New Jersey, has responded rapidly to more than 20 urgent operational requests for nonlethal (NL) munitions since 1995. These munitions were fielded to provide the Army with capabilities that filled the gap between "show of force" and lethal fire in peacekeeping missions. More than 150,000 rounds of 40-millimeter and 12-gauge blunt-impact, small-caliber NL munitions and other items have been fielded to date, using accelerated materiel-release fielding procedures that were originally established to support Operation Desert Storm. Picatinny Arsenal fielded these NL munitions to the U.S. Support Group-Haiti for Operation Restore Democracy; Task Force Eagle in Operations Joint Guardian and Endeavor in Bosnia; Task Force Falcon in Kosovo; and locations within the continental United States (CONUS) because assets were urgently needed for predeployment readiness training.

Picatinny Arsenal was able to respond to these real-world requirements because of its proactive investment of Army science and technology funds, thus preparing to provide the Army and joint services with the new capabilities associated with the post-Cold War era's increasing incidence of stability and support operations. Significantly, Picatinny Arsenal initially provided these NL capabilities before any formal operational requirements were generated. This created a contingency stockpile of NL munitions that increased emergency-basis asset availability and provided a rapid-response fielding until standard munitions could be developed and fielded through formal product manager programs (an ongoing process).

This anticipation of user needs and ability to field badly needed materiel capabilities led to Picatinny Arsenal's being selected to provide support to the Army's Project Manager, Close Combat Systems (PM CCS). The PM CCS mission is fielding standard Nonlethal Capability Sets (NLCSs) to the Army. In this support role, from March 2000 to the present, Picatinny Arsenal helped field NLCSs to the following areas:

- U.S. Army Europe (Kosovo and Bosnia)
- Forces Command (Fort Drum, New York, and Fort Lewis, Washington)
- Central Command (Kuwait)
- Southern Command (Guantanamo Bay)
- Crane Army Ammunition Activity (integrating NL assets into sets)
- Other CONUS and outside CONUS locations

Within the North Atlantic Treaty Organization, Picatinny Arsenal is leading the way toward complying with a defense capability initiative requiring that members have NL capabilities by 2005.

Feedback from the in-theater use of fielded NL munitions has been highly encouraging. In April 2000, Task Force Falcon in Sevce, Kosovo, used 40-millimeter NL munitions during a significant crowd-control engagement—U.S. soldiers were being hit with tree branches and stones. Lieutenant Colonel James Brown, the Task Force Falcon Provost Marshall, said, "The bottom line was...NL munitions worked well and kept us from having to kill someone." Significantly, the MP battalion involved in this incident was awarded the prestigious Holland Award for its conduct in this first major incident using NL munitions. For a detailed look at this mission, see article on page 27.

NL munitions fielded by Picatinny Arsenal were used in a second incident in February 2001, in Pasjane, Kosovo. There, U.S. forces were able to completely disperse an unruly mob—without loss of life—that had grown rapidly from 100 to 300 individuals by selectively targeting specific people. Picatinny Arsenal continues to proactively provide the critical NL capabilities U.S. soldiers need to enhance their effectiveness in peacekeeping missions.

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*Mr. John Cline is the systems manager of the Nonlethal Technology Integration Cell at TACOM-ARDEC, Picatinny Arsenal. He graduated from Villanova University in 1982 with a bachelor's in mechanical engineering, earned a master's in business administration from Florida Tech in 1987, and is Army Acquisition Corps-certified.*

# The Evolution of the Army Combat Shotgun—



## From the Blunderbuss to the Lightweight Shotgun System

*By Lieutenant Colonel (Retired) Bo Barbour*

*The origins of today's combat shotgun can be traced to the time that the earliest settlers reached America. This article examines this weapon's development process.*

### From Blunderbuss to Fowling Piece

With the arrival of the first English colonists, soldiers brought an armory of weapons, two of which were the matchlock-ignited rifle and the blunderbuss. The rifle was used for long-range targets, the blunderbuss for short-range targets. This arrangement served the average English soldier well as he protected the Jamestown colony and hunted for food. The blunderbuss was the weapon of choice for close-range Indian attacks and shipboarding. This weapon had the added advantage of using (for ammunition) whatever small, sharp objects one could cram down the barrel on top of the black powder. Over time, the flintlock ignition replaced the matchlock, and the blunderbuss was replaced with the single- and double-barreled English fowling piece. In the South, during the Revolutionary War, faced with a desperate shortage of muskets, the colonists used the fowling piece as a close-quarters combat weapon while ambushing the redcoats on the flanks of their line formations and shooting the horses from under their cavalrymen.

One hundred years later, the flintlock was supplanted by the percussion system and the fowling piece by the shotgun we know today. As settlers moved west, the standard musket was loaded with shot to hunt birds and small game and single balls to hunt large game. The double-barreled shotgun had been developed by midcentury and, in an era of single shots and slow loading, was to be a major contributor in the coming conflict.

### Shotguns and Cavalry in the Civil War

The Civil War was fought with every conceivable firearm available. Muskets, carbines, numerous repeating rifle systems, and shotguns were all employed. The shotgun was used extensively in all theaters of the Civil War, but most prominently by the Confederate cavalry who—much like their forefathers in the Revolutionary War—used it to skirmish with the Union cavalry at close range. The writings of Union cavalrymen contain indignant passages about horses and riders being shot with rocks, nails, and screws that were fired from the barrels of Confederate sawed-off shotguns. The combat shotgun had come into its own.

At the close of the Civil War, the Army was charged with protecting westward expansion; therefore, a variety of shotguns were pressed into use. By 1865, the Army had replaced percussion system weapons with centerfire cartridges similar to those used today. The newly developed "trapdoor" Springfield rifle was also built in a shotgun configuration using its same Allin system (named for the armorer who developed it). Until the turn of the 20th century, this was the shotgun that soldiers used in the West to fight Indians, guard prisoners, and hunt game. Meanwhile, in the 1880s, the demand for a shotgun with more firepower (needed for market hunting) produced the first true combat shotgun—the Winchester® Model 1897 (known as the Model 97).

### Combat Shotgun in the World War I Trenches

The rifle and machine-gun fire of the Allied and Central Powers forced men to seek the safety of trenches. Taking to these trenches also underscored the weaknesses of the long Springfield and Enfield rifles in trench fighting. The conventional bolt-action infantry rifle was too long and lacked the firepower needed to overcome the interlocking trenches and determined German defenders carrying machine guns. The Winchester Model 97—firing a modern 12-gauge shell—with pump action; six-round magazine capacity; and short, 18-inch barrel



was brought over by American military police and infantrymen and rapidly became known as the "trench sweeper." The infantryman breaking into a trench could sweep both sides of it (to the depth of a passageway) with multiple buckshot rounds. Once leaders understood the 50-meter range of this weapon, they employed it with skill. A soldier with a shotgun, exceptionally fast to pump and fire, could quickly suppress German trench assaults and clear suspicious dugouts with devastating effectiveness. Out of the trenches, the Model 97 cleared Germans out of farmhouses and buildings in French villages with equal effectiveness. On 27 September 1918, Sergeant Fred Lloyd, using a Model 97, advanced alone into a German-held village and began methodically clearing the village, rapidly pumping and firing the shotgun as he moved. He finally collapsed with exhaustion after flushing and routing thirty German soldiers. The combat shotgun had earned its place as an Army secondary weapon.

At the close of World War I, the Army had 19,600 Model 97s on hand. These were used to guard prisoners and mail in the '20s and '30s. In this era, too, civilian law enforcement agencies added birdshot to the crowd-control ammunition inventory. Birdshot was seen as a less lethal alternative when fired over the heads of rioters but often had tragic results. Civilian law enforcement agencies soon embraced the pump shotgun, and it can now be seen in almost every police cruiser.

### Shotguns in the World War II Jungles and Cities

At the time of the Japanese attack on Pearl Harbor, the Army found itself woefully short of the number of shotguns that was sufficient for jungle and house-to-house fighting. Shotguns were procured in great numbers and from multiple firearms manufacturers. As a result, there was no standard shotgun, a situation that has been rectified only recently. The shotgun was the secondary weapon of choice in the jungles of New Guinea. In the European theater, it was highly sought after in the house-to-house fighting across France. The shotgun had one major deficiency that placed a dilemma on the soldier: it forced the soldier to carry two weapons—the rifle (for long-range shots) and the shotgun. This was roughly 18 pounds of weapons for a variety of tasks. The result of this situation was that usually one man in the squad was assigned to carry the shotgun, forcing him to sacrifice the longer-range fire of the M-1 rifle.

With the formation of the Military Police Corps in 1943, the shotgun was used to guard prisoners and supply lines in the extended rear areas and lines of communication back to the continental United States. Its capabilities were ideal for the professional law enforcement missions taken on during the war.

### Post-War Development and Renewal in Vietnam

During the post-World War II era, numerous attempts (over a fifty-year period) were made to develop a semi-automatic combat shotgun that was completely reliable under all combat conditions and with all varieties of ammunition. None proved to be completely satisfactory, and the American infantryman and military policeman were to fight in Korea and Vietnam armed with pump-action shotguns that repeatedly validated their effectiveness. In Vietnam, the pump-action combat shotgun was the weapon of choice for point men and dog handlers on combat patrols. Specially modified shotguns were developed to engage and neutralize the North Vietnamese guard force during the unsuccessful 1970 Son Tay raid that attempted to free American prisoners of war located deep inside North Vietnam.

### Small-Scale Contingencies and the Employment of Nonlethal Munitions

The recent involvement of the Army in small-scale contingencies and stability and support operations has brought the requirement for an effective, improved combat shotgun into the forefront of small-arms development. Operations in Somalia demonstrated the need to address the half-century-long dilemma of a soldier carrying a rifle and a shotgun, multiple types of ammunition, and the added burden of additional ballistic armor that is essential to survival in house-to-house fighting. The soldier also had to have a response to noncombatant crowds that might threaten his lines of communication.

By 1993, the combat shotgun had undergone little evolution since World War I and, in size and weight (8.5 pounds), still resembled the venerable Model 97. To effectively fight in cities, the soldier was becoming overloaded with weapons. Additionally, technology had caught up to the requirements of civilian law enforcement with the development of effective, less lethal shotgun ammunition. The Army soon adopted a family of commercial off-the-shelf nonlethal (NL) munitions for the shotgun; it used rubber buckshot pellets (the M-1012) and fin-stabilized rubber bullets (the M-1013). These munitions were paired with the Mossberg® 500 (M-500) series shotgun associated with the Nonlethal Capability Set (NLCS) that was fielded in 1999. Both munitions and the M-500 proved to be highly effective in the hands of the military

police who were encountering hostile crowds in Kosovo in February 2001. The blunt trauma produced by these munitions was sufficient to produce the pain necessary to make the most ardent rioter leave the most organized mob. The high volume of fire produced by the shotgun also enabled the military police to effectively gain the initiative and rout the rioters who were threatening their freedom of movement. However, the age-old problem remained: lethal weapons were still required to overwatch the soldiers who were armed with the less lethal loaded shotguns. The best solution would be to combine lethal and NL capabilities into one highly effective weapon with exceptional target acquisition capability.

## Development of the Lightweight Shotgun System

In response to these mission needs, in June 1997, the U.S. Army Infantry Center developed an operational requirement for the M-4 Modular Weapon System (MWS) calling for an accessory attachment shotgun. The Dismounted Battlespace Battle Lab (DBBL) pursued an Advanced Concepts Technology II Program contract with Colt® firearms that asked them to produce an accessory attachment shotgun that met the specifications in the operational requirement. Colt produced four Lightweight Shotgun System (LSS) prototypes that were tested in a limited-objective experiment (LOE) conducted by the DBBL. The first prototypes were multishot, magazine-fed (three-round magazine), manually operated 12-gauge shotguns. Chambered to accommodate 3-inch magnum shells, the prototype fired a wide variety of lethal, NL, and door-breaching munitions. The LSS was operated by a reversible charging handle (could be used right- or left-handed) and most importantly, only added 2 pounds 11 ounces to the weight of the M-4 carbine. The length of the under-barrel shotgun was 16.5 inches. The test results validated the principle that the LSS was an effective delivery means for lethal, NL, and breaching rounds at the standard ranges for these munitions.



*Version III LSS mounted beneath the M-4*



*An MP, on patrol in Kosovo, with the Mossberg 500-series combat shotgun, 2001*

Coinciding with the LOE for the LSS, the Infantry Center decided to support the requirement for the joint service combat shotgun and dropped the requirement for an accessory attachment shotgun from the operational requirements document for the M-4 MWS. A second version of the LSS was developed based on the first LOE, and four prototypes were delivered to the DBBL. Subsequently, a third version was developed.

Version III was safety-released recently for a February 2003 evaluation funded by the Joint Nonlethal Weapons Program. It focused on the LSS in an NL role and its application as an associated item to the U.S. Army/Marine Corps NLCS. A squad of Army infantrymen and a squad of Navy Seabees participated in the evaluation. Version III incorporates several features and improvements that are based on technical testing and



*A soldier from the 75th Ranger Regiment fires the LSS beneath the M-4 MWS with a close-combat optic.*



*Stand-alone LSS with retractable buttstock*

feedback from the DBBL. Versions II and III come with a kit that allows soldiers to convert the attachment version to a stand-alone version with a pistol grip or to a stand-alone version with a pistol grip and buttstock.

Meanwhile, the Infantry Center has rescinded the Army requirement for the joint service combat shotgun. The DBBL, with the Program Manager, Soldier Weapons; the Program Manager, Crew-Served Weapons; the U.S. Army Tank-automotive and Armaments Command's Armament Research, Development, and Engineering Center, Close Combat Armaments Center; the U.S. Army Aberdeen Test Center; and the Infantry Center's Directorate of Combat Developments, are evaluating the LSS for limited-issue operational experimentation. Soldiers could soon see the LSS operationally tested in any of the three current configurations as a 3-pound replacement for the 8.5-pound shotgun they carry today. Equally as important as reducing the soldier's load is the capability to fire NL (12-gauge LSS) and lethal (5.56 millimeter M-4) munitions from the same weapon system with equal speed. As the LSS is fed from a vertical magazine, the soldier can replace a five-shot magazine of NL buckshot with lethal buckshot as rapidly as the situation requires. The skill necessary to fire the LSS is similar to the M-203, a skill that is taught to every soldier. The LSS enables the soldier to quickly accomplish door-breaching, entry, and room-clearing operations in an urban warfare environment where he may encounter a NL crowd-control situation on the next city block.

### Conclusion

After a century of almost static development, the combat shotgun has evolved quickly, responding to the soldier's need for new capabilities that meet the challenges of 21st century warfare. The LSS represents a bold approach, meeting these challenges by providing a rifle and a shotgun, lethal and NL capability, in one lightweight weapon system. The LSS is the first revolutionary combat shotgun of the 21st century.

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*Lieutenant Colonel (Retired) Barbour is a program manager with ALION Science and Technology and was appointed as the Army Nonlethal Weapons Program Support Officer on 5 December 2000. He is a combat infantryman with more than 22 years of service and is a graduate of the Interservice Nonlethal Individual Weapons Instructor Course at Fort Leonard Wood, Missouri. His last active-duty assignment was at Headquarters, U.S. Army Training and Doctrine Command as the chief of the Light Forces Branch in the Combat Arms Division of the Deputy Chief of Staff for Developments, where he oversaw the development of the Army Nonlethal Weapons Program.*

## Correction

**Colonel (R) John F. Hyde's** name was left off of the list of the U.S. Army Military Police Corps Regimental Hall of Fame members (page 20, September 2002 issue). We apologize for this error.

# A Nonlethal Ambush—
## A Capabilities Approach to the Future

*By Mr. Joseph Barnes and Major Ed Lowe*

Throughout the history of war, a key component of success or failure often hinged on one nation's technological superiority over another. Furthermore, the proper application of such technology fuels a nation's war machine. In the U.S. Civil War, the advent and use of the telegraph, the expansion of railhead operations, and the advancement of weaponry propelled the nature and conduct of war to a higher level.

World War I probably painted the clearest picture of technological advances outpacing existing military theories and tactics. The use of the machine gun, and the introduction of the tank and the airplane are just a few examples of the technologies introduced during this war that yielded horrific battlefield casualties. The argument has been made that the era's tactics did not match its technology. Thus, the dreadful amount of casualties produced was a direct result of the dichotomy between technology and tactics.

Almost 100 years later, military leaders continue to research and develop new weaponry and methods to attack and defeat a given enemy. Strategic-level considerations, political concerns, rules of engagement, and use-of-force criteria have modified young leaders' aggressive instinct to act with decisive—and potentially deadly—force at the first indication of trouble.

With these considerations in place, MP leaders must fully comprehend that their decisions could have positive or detrimental effects on national policy. A nonlethal (NL)-capabilities approach to training and small-scale contingencies (SSCs) offers leaders on the ground an additional course of action. Additionally, the mission may be considered a failure if deadly force is applied in a given operation.

We are using a scenario that provides a brief glimpse of what future operations may be like. Although the country and characters are purely fictitious, the situation is entirely plausible. We have interspersed specific descriptive commentaries within the scenario; the italics represent the scenario.

*The situation begins like this:*

*Lieutenant General Slovadan Petrovic departs his hotel early in the morning, accompanied by a security detail of six soldiers (Figure 1). Moving in a two-vehicle convoy, they pass through burned-out, destroyed villages on the way to Btrovican to meet with local leaders. Two months earlier, Petrovic was under warrant for arrest by the International Court of Justice for issuing orders that led to the killing of unarmed civilians.*

*Following the International Court indictment, Petrovic skirted arrest by maneuvering around the countryside in unmarked vehicles and showing up unexpectedly at various meetings and gatherings. He even passed through several United Nations (UN) checkpoints, failing to be recognized. However, through communication signals intercepted by the National Security Agency and help from undercover agents, his location and intended movements for the day were confirmed*

*Through an analysis of collected data, it was determined that he would pass through a UN checkpoint (operated by U.S. military police) on the far southeastern corner of Btrovican. The checkpoint was in the exact location where the convoy would enter the town. So as not to disrupt the normal day-to-day operations of UN forces, the decision was made to use military police to apprehend the group. However,*

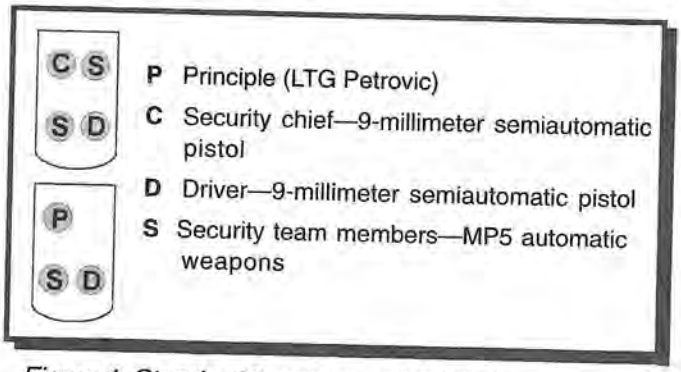



*Figure 1. Standard 6-man security detail*

*the orders defined clearly that Petrovic must be taken alive. Using the Nonlethal Capability Set (NLCS) equipment and munitions would be the preferred means to ensure mission success.*

The commander's intent was to take Petrovic into custody without inflicting casualties, so he had to look outside the box for capture capabilities. Initially, the focus of the mission was to transition quickly from apprehending the security detail to rendering it impotent. So, how can a well-armed, well-trained security team be rendered immobile and out of the fight?

Two excellent new additions to the Army's inventory are part of the NLCS and can assist with this task. They are the modular crowd-control munition (MCCM) and the M1 portable vehicle-arresting barrier (PVAB). As illustrated, the MCCM is very similar to the old ground-emplaced claymore mine, except that the charge has been tapered down, and it is filled with six hundred 32-caliber rubber pellets instead of lethal ones.



MCCM

In terms of an arresting barrier, the M1 PVAB is similar in content to the arresting barriers used aboard aircraft carriers to catch and stop landing planes. It can stop a vehicle (up to 7,500 pounds) at speeds up to 45 miles per hour with a stopping distance of less than 200 feet. The M1 PVAB not only renders the vehicle inoperable but also encapsulates the occupants, preventing their escape.



M1 PVAB

*Just inside the checkpoint into Btrovican, a fork in the road allows drivers to go east or northeast. Both roads are only wide enough for one vehicle. It's about 500 meters from the entry to the village's main street.*

*Petrovic's two-vehicle convoy takes the northeastern route. Two M1 PVABs have been pre-positioned approximately 200 meters apart; area debris already provides adequate camouflage. Additionally, at approximately 50 meters from the road's end, a series of twenty MCCMs, also camouflaged, are positioned along the sides of the road (Figure 2). Caltrops can also be used as an additional measure, ensuring that the vehicles are rendered immobile. Caltrops are four-pronged metal pieces, approximately 2 inches tall, that puncture tires or boots. A soldier can easily employ caltrops by attaching fifty of them to five hundred and fifty cords and scattering them in a designated camouflage area. As the convoy approaches this point, the MCCMs, from closest to farthest, are detonated, providing the desired effect; both vehicles retreat to avoid the threat to their front.*



Caltrops

*Traveling in reverse and gathering speed, the vehicle containing the four-man security detail is captured by the first M1 PVAB (Figure 3). Despite the driver's escape attempt, he cannot free the captured vehicle because the M1 PVAB is wrapped around the rear axle. The occupants cannot open the doors because the M1 PVAB's tough nylon-webbing net stretches across the vehicle's doors, totally encapsulating them. Witnessing the capture of*

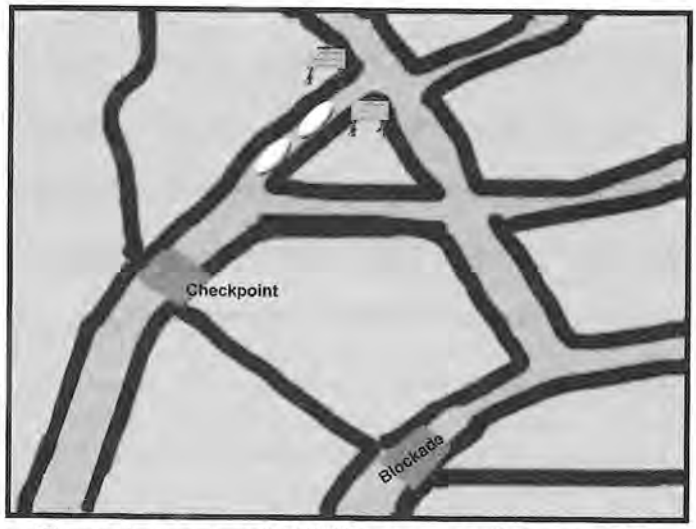



*Figure 2. A series of MCCMs are set off to simulate an attack.*

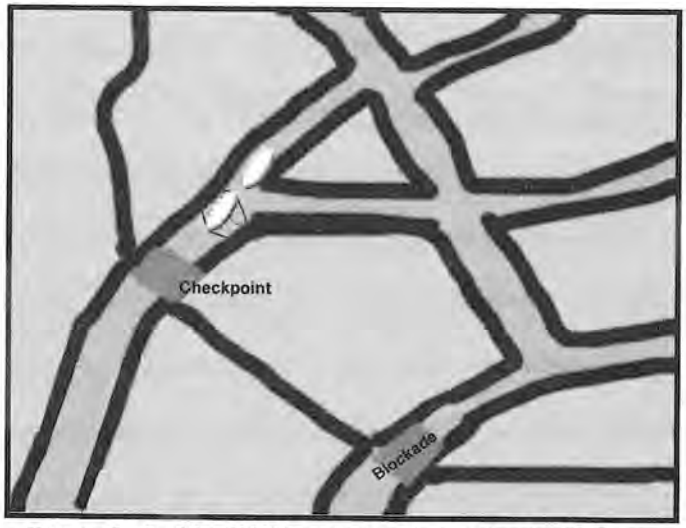



*Figure 3. An M1 PVAB captures the trail vehicle from the rear. Vehicle occupants are unable to get out.*

*the trail security vehicle, Petrovic orders his driver to drive forward, away from the detained vehicle. As the vehicle tries to escape in the direction of the initial explosions, an M1 PVAB captures it (Figure 4). The convoy vehicles are now 200 meters apart.*

Despite taking a considerable amount of timely, coordinated effort, the most dangerous part of this mission is yet to come—taking Petrovic and his detail into custody. This situation is similar to a hostage situation, and caution is the watchword. Remember, these are well-armed and well-trained soldiers, obligated to protect Petrovic from harm. A dialog of communication must be opened between those captured and the military police.

Two types of equipment in the NLCS help leaders communicate in such situations. They are the portable hand-held bullhorn and the ground-mounted portable bullhorn. Through an interpreter, the platoon leader paints a word picture, illustrating the predicament, negotiating the surrender, and delivering the ultimatums and time lines.



Portable bullhorn

*Recognizing their seemingly hopeless situation, the vehicles' occupants throw their weapons from their opened windows. Ensuring that adequate overwatch is in place, two teams of three military police each, using ballistic full-length body shields, approach the vehicles from both directions. Each team collects the discarded weapons and returns to a safe location, out of view. Through interpreters, the platoon leader orders the men to present their arms and hands outside their windows and keep them in sight at all times. These orders are repeated more aggressively each time until there is full compliance.*

*Finally, two squads from two platoons approach each vehicle. One squad from each platoon acts as a security overwatch. First, each of the four approaching squads has to cut through the M1 PVAB straps encasing the vehicles. Starting with the rear doors then moving to the front, each occupant is pulled away from the vehicle, immediately placed into a physical disadvantage, and then flexicuffed. As two of the four occupants in the trail vehicle are being removed, their sense of duty to their leader causes them to lunge toward a group of military police. Immediately, the overwatch squads open fire.*




*Figure 4. An M1 PVAB captures the lead car with the principle from the front as it attempts to escape. Vehicle occupants are unable to get out.*

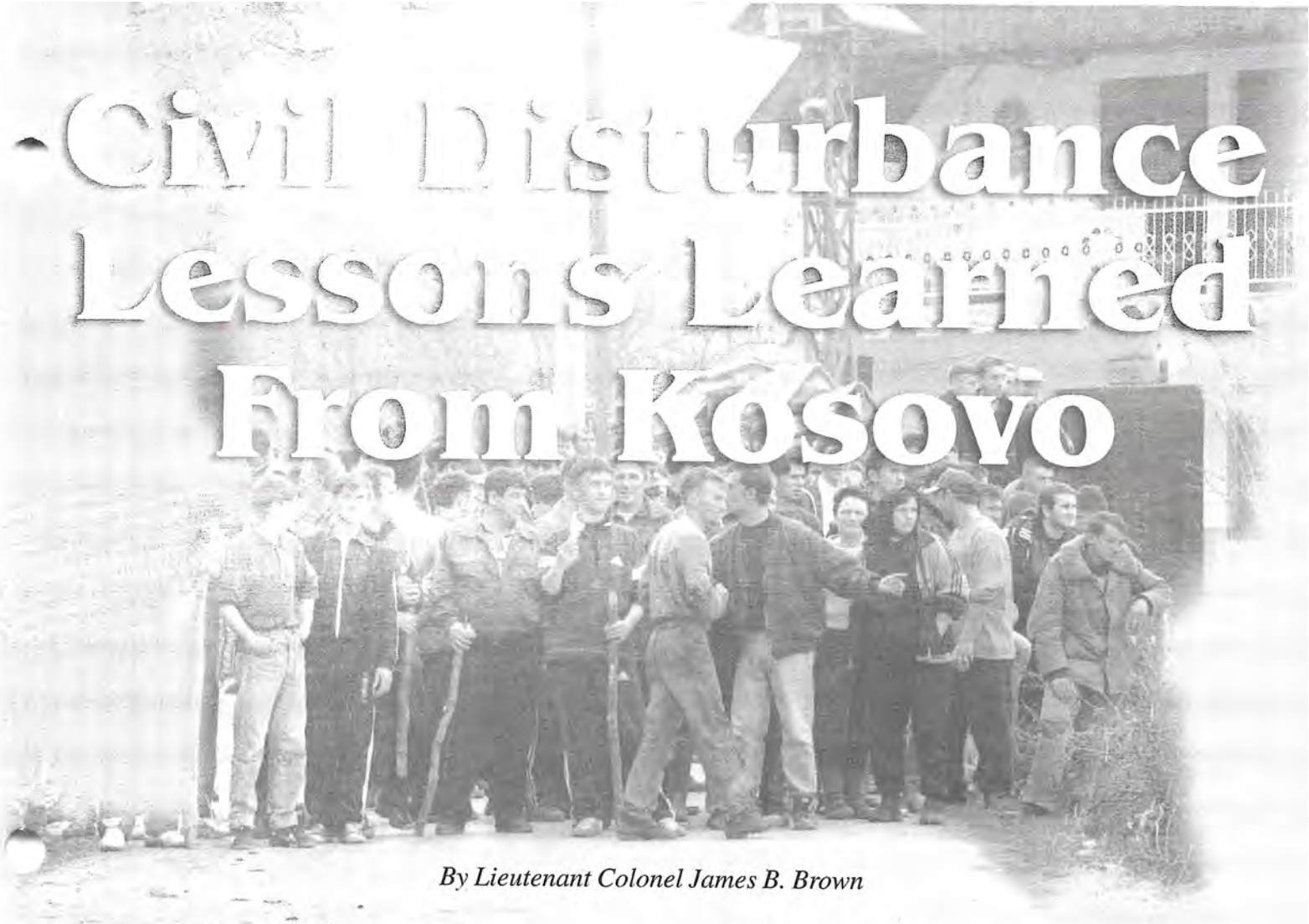
*Instead of being fatally injured, the attackers are incapacitated by two to three hits from 12-gauge fin-stabilized rounds and 40-millimeter sponge grenades. These single-projectile rounds allow soldiers to safely and effectively engage their targets from no closer than 10 meters but no farther than 50 meters. Engaging closer than 10 meters could result in more serious injuries, including death. Engaging targets any farther than 50 meters makes the rounds ineffective, as the velocity tapers off considerably. The main thing for soldiers to remember is the closer the target, the greater the impact. Although hit several times to accomplish the desired effect, both men will fully recover from their injuries.*

Entire operations seldom work out exactly as planned. Planning for this type of mission (engaging a highly trained and highly armed enemy) has to include the ability to answer lethal threats with a lethal response. Never show up to a gunfight with a beanbag alone. For the protection of soldiers, a good lethal overwatch system must be in place. To sum up, if properly employed, NL equipment and weapons make valuable MP support even more invaluable to commanders.

*Mr. Barnes is the assistant chief of the Doctrine Division, U.S. Army Military Police School, Fort Leonard Wood, Missouri.*

*Major Lowe is the Doctrine Division chief.*

# Civil Disturbance Lessons Learned From Kosovo



*By Lieutenant Colonel James B. Brown*

When the 793d Military Police Battalion moved into Kosovo, literally at the head of the first formations of Kosovo Force (KFOR) soldiers from the 1st Infantry Division (known as the Big Red One) in June 1999, they found an almost-vacant province. The cities were empty; only a few old, invalid, or rugged individuals chose to remain. The Serbian army had retreated from the province days before, and there were still some armed ethnic groups operating throughout the region. The soldiers of Task Force Spartan—as well as the Big Red One's 2d Brigade Combat Team (BCT) in the first rotation—were overwhelmingly successful in achieving the conditions for the return of the refugees who had fled Kosovo during the recent period of oppression and fighting. By the time the second rotation of soldiers from the Big Red One's 3d BCT arrived in Kosovo five months later (November 1999), the dramatic change in demographics began to express itself through demonstrations and civil disturbances. While the 793d had to fight to establish the peace, the 709th Military Police Battalion aggressively patrolled throughout the province, maintaining the tenuous peace and engaging with the local leaders who were emerging with the return of refugees. The 709th's most significant action in Kosovo was dealing with a large number of demonstrations and several riots. Throughout its rotation, the battalion learned significant lessons in dealing with riots and civil disturbances, which may be of value to future military police deploying to peace-enforcement and nation-building missions.

## Right of Assembly

The right of assembly is critical to a democratic country and is so important to Americans that it is protected in the First Amendment to the U.S. Constitution. It should be expected (and perhaps even encouraged) that populations transitioning to democracy under the protection of U.S. or international peacekeepers will exercise this right as well. Demonstrations are a good way to discover the true leaders and determine their driving forces and key concerns. It is recommended that peacekeepers establish a way for demonstrators to apply for a permit allowing them to hold peaceful demonstrations and rallies. Local law enforcement bodies (often made up of peacekeeping soldiers) need to ensure that there is a place to demonstrate. A circulation plan needs to be put in place that maintains the flow of traffic and supplies. Encouraging legal demonstrations and rallies can move dialog with local

leaders forward, assist the people in participating in government, and encourage them to vote in upcoming elections. Many of the people that peacekeepers encounter are preparing to vote in elections (that will determine the future of their local governments in a large measure) for the first time. Encouraging this legal outlet for expression of ideas also decouples legitimate local leaders from the other groups choosing to employ demonstrations and civil disturbances as a weapon to apply leverage outside of the auspices of the transitional government.

### Civil Disturbance Incidents

During the 709th's rotation with KFOR-1B (November 1999 to June 2000), there were several times when local leaders sought to apply leverage by blocking key roads. The purpose of these blockages ran the gamut from demanding that a town be renamed (from its Serbian name to an Albanian name) to demanding the release of a detainee and trying to barricade U.S. forces into a village and hold them hostage. During these events, traffic would quickly back up and block a two-lane main supply route (MSR) for hours. The military police were generally the first to detect these blockages and were able to surge forces and deal quickly with the demonstrators.

### Civil Disturbance Management

When a civil disturbance blocking an MSR is reported, the first mission is getting eyes on it and establishing a liaison with the local leader. At the same time, the MP task force generates response forces in case force becomes necessary. We learned that it was best to have a commander engage with the local leader to assess if they could negotiate to move the demonstration out of the highway. Also, the commander should then determine if further forces are needed. Commanders are accustomed to dealing with local leaders, commanding attachments (such as military working dogs [MWDs], allied soldiers, or other task force assets), and are best suited to dealing with the multiple disciplines of conducting a civil-disturbance operation and keeping higher headquarters informed.

There is a tendency for soldiers outside the wire, away from the task force headquarters, to seek to resolve situations with their available resources at the lowest level. This sort of initiative is a core competency of our military police. However, it is critical to ensure that higher headquarters knows what is happening so it can anticipate your possible needs and plan to resource you for success rather than responding later to rescue you from failure. Requesting that an observation helicopter fly above the event, reporting on movement of the masses and providing overwatch of your forces, is an excellent way to record the event (through forward-looking infrared [FLIR] cameras) and provide early warning of unexpected movement against your soldiers.



*Establishing rapport with local leaders is helpful for peacekeeping forces.*

More often than not, military police dealt well with the local leaders, convincing them to move off of the highway to discuss the source of their concerns. When force was required, only the minimum, in a graduating scale, was employed. Military police in riot gear moved forward in concert with the MWD teams, securing the formations' flanks. "Snatch" teams apprehended the agitators who approached the shields of the advancing military police. We did not send our teams into crowds because it stirred up a tremendous commotion and put the snatch team at significant risk. Also, the agitators we had already identified tended to lead from the front in order to motivate the crowd and were readily available when actual physical confrontations arose. When agitators were apprehended, they were restrained with flexicuffs (on the hands and the legs) and carried away to the rear by the awaiting transportation. Their rapid disappearance had a very positive effect in quelling the crowd. Had they remained on the site, in restraints, they could have become a rallying point for demonstrators.

We used the winches on our high-mobility multipurpose wheeled vehicles (HMMWVs) to pull vehicles (that had been parked to form a zigzag obstacle) from the highways. Before stepping forward, the winch cables were run out and the hooks were at the ready for attaching to anything that we wanted to remove. In the instance that we did this, as we were removing the first vehicle, the operators of the other vehicles ran from the demonstration and into their vehicles to avoid the same fate.

Camera teams were helpful in recording events and gathering information. They captured the conditions of the riot and the violence that our soldiers faced. This would

be critical information in case there was a lethal event. This photo data should be linked to any biographical or other information from the event and passed up to the task force and down to the companies in the battalion as soon as possible. The nesting of this information within the police intelligence function of our military police is an area worthy of further effort. The Italian Caribinieri (the national police) seemed to have the best database for intelligence collection on personnel and was able to act on this intelligence very effectively.

## Riot Training

After initial contact with riots in Mitrovitca, Kosovo, in February 2000, the 709th's leadership conducted an after-action review (AAR) that captured lessons learned and identified challenges in dealing with crowds. Employing Army training doctrine and experience from our Combat Maneuver Training Center in Hohenfels, Germany, we crafted a major training exercise in our own living space at Camp Bondsteel, replicating the stresses and challenges of an actual riot growing out of a cordon-and-search operation.

To maximize training value, a reinforced company task force was created (under one line company commander) that included platoons and elements—including K-9—from the entire battalion. The company task force trained for half a day on basic riot formations, drills (such as snatching and nonlethal [NL] fires), and supporting a cordon-and-search operation. At the same time, an opposing force of villagers, agitators, and rioters were being trained in the MP billets area. In the afternoon, the MP task force moved into position and began a cordon and search of designated buildings in the actual MP compound. As the search developed and weapons were found (they had been specifically stashed for this exercise), a demonstration began to develop that turned into a full-blown riot. By the end of the evening, a complete AAR was conducted, including digitized video (made using a soldier's camera) as well as digital film and soldiers' captured experiences. This AAR and the lessons learned from our training and first riot became the basis of all future success in riot operations in Kosovo. The value of this training was underscored by the fact that one of our companies had joined the task force right from Fort Bragg, North Carolina, and didn't have the opportunity to train before with the battalion task force during the mission-rehearsal exercise for Kosovo. We also found that real riots are far more challenging than our predeployment training had prepared us for. After our first experiences in Mitrovitca, we were much better suited to develop more violent and challenging riot training than we had been willing to do previously.

## Lessons Learned

Our experiences and training taught us many important lessons:

*Mobility is always a key issue in responding to a riot.* HMMWVs are inefficient at delivering a riot-control force, since the HMMWVs stack up quickly, with each vehicle just delivering a three-man force. The initial response force should deploy in HMMWVs because they are responding to the incident from their patrols. Follow-on forces, however, should be delivered by air or truck, allowing a large force to move together. Demonstrations create massive congestion quickly. It is best to analyze the demonstration area and redirect or hold traffic elsewhere. Air mobility of a riot-control force is the best way to quickly deliver a force of soldiers. Practice loading and unloading procedures well in advance. However, a riot-control shield could become a very damaging foreign object if it were to come loose and fly into a helicopter's prop wash. Additionally, all deploying troops need to know the basics, such as never going near the rear rotor of a helicopter under any circumstances.

*Leaders need to conduct a good precombat inspection before moving out to a riot.* Soldiers become tremendously thirsty during conflicts and should deploy with two full canteens. Side arms need to be secured (in holsters with a lanyard) to ensure that they don't become lost during a struggle. (We never lost one in a riot, but a HMMWV driver, with the help of his squad, spent considerable time looking for his weapon in the snow until finally locating it!) Soldiers should visit the latrine and relieve themselves before deploying to a riot—chances are, they will not have the opportunity again for hours. Manpack transceivers and small radios should get fresh batteries and be secured properly. Hoods should be removed from protective masks because they dramatically increase body temperature and water loss and make hearing more difficult. Finally, whatever riot-control forces are put together,



*Mobility is a key factor in responding to a riot scene.*

they should conduct a hasty rehearsal of formations and movement before heading out. The reality is that the team that moves out to an incident is never exactly the same team that last trained together. There is *always* time for a quick rehearsal to do it right.

*Communications are absolutely critical in a riotous situation.* In our largest riot in Sevce, we found that one company's assigned communications frequency had become the inadvertent network for the entire U.S. task force. Communicating was extremely difficult with so many levels of command crowding onto one network. Manpack transceivers and handheld radios ran out of power during the fight. As a result, those of us forward in the fight relied on our talk-about radios that are powered by AA batteries and are not secure. It became evident during the fight that our unsecure communications were being monitored. Communications need to be further developed for communicating within a riot-control force. Overall, we learned that communications training tends to get far less attention than it should.

## Nonlethal Weapons

In the 4 April 2000 Sevce riots, our military police were attacked with clubs and barrages of large rocks. The protective gear that our soldiers wore—KEVLAR® helmets with face shields, ranger body armor, riot-control shields, and shin guards—was effective protection against clubs and rocks. However, soldiers who had joined the task force from the continental United States had older-style shields and face masks that shattered under the barrage of rocks. Rocks were injuring the soldiers and could kill them. Against this assault, military police fired back with NL munitions. The fires were surprisingly accurate and convinced any of the rioters who were struck to immediately head for home.

The employment of NL fires had tremendous effect. It allowed the commander and his military police to take back the initiative and bring the situation under control. The three types of NL rounds employed were the 40-millimeter stinger ball, the sponge grenade, and the foam-baton-type munitions. The stinger ball and sponge grenade rounds were effective. While the munitions come with varying tips on engagement ranges and methods, in the midst of a total melee, they were generally fired at very close range and at point-blank center of mass.



*Maintaining communications is critical in a riot situation.*

As a result of running ranges for our gunners in full riot-control gear (firing with the face mask affixed to one's helmet, in full body armor, carrying all equipment) before our actual engagement, our gunners were surprisingly accurate. The foam-baton munitions were not, however, as effective as the other two rounds. In fact, several gunners reported seeing the rounds slowly leaving the barrel of their weapon and striking the intended target with no visible effects. This was a nightmare because the target now thought he was invincible and had to be struck with a more convincing round. After our engagement in Sevce, foam-baton rounds were used only for training.

There is no question that the use of NL munitions at Sevce filled the tight gap between lethal and NL force with convincing results. Had the 709th not been equipped and trained to employ these fires, they would have certainly had to resort to lethal fires to deal with the situation at hand. The use of lethal means in this incident could have had a seriously destabilizing geopolitical effect for our efforts in Kosovo. It must also be noted that a supportive and understanding command climate that allowed commanders to employ these weapons (within the rules of engagement) was also critical.

## Conclusion

It is clear that the Army will continue to play a leading role in peace-enforcement, peacekeeping, and nation-building missions. Encouraging the responsible exercise of democratic processes—which includes the right of assembly—while discouraging attempts to use demonstrations and riots as a weapon to hijack the development of representative governments, was an important aspect of our duties. Our military police are on the front line of this critical mission and need to be well-trained and well-equipped in advance to deal with these situations. The art of dealing with riotous situations is a challenging task requiring a tremendous amount of mental agility and physical stamina. This article is only a sample of the many lessons learned from the 709th's experiences in Kosovo. Successfully dealing with demonstrations and riots varies greatly based on the local culture and customs and the geopolitical situation. The purpose of documenting and sharing these lessons learned is to help other leaders prepare themselves and their soldiers better and to spur further development of NL capabilities that allow us to save lives while keeping the peace.

## A Proposed Matrix for Dealing With Demonstrations

| Event | Actions (in priority order) |
|---|---|
| Demonstration blocking MSR is reported. | 1. Alert higher headquarters.<br>2. Get eyes on and a second report (the first report is always wrong).<br>3. Initiate movement of other MP patrols to the area of concern.<br>4. Alert K-9 unit to prepare to move MWDs to area.<br>5. Issue warning order to other MP units to prepare to stand up platoons.<br>6. Request that task force check if air transport is available. Coordinate for truck to transport ground force, if necessary. |
| Demonstration is confirmed and will not leave the road open. | 1. Ensure that commander is en route.<br>2. Establish operational frequency for event—pass to all units and task force headquarters.<br>3. Update higher headquarters.<br>4. Alert MP units to prepare to deploy.<br>a. Rehearse riot-control formations and commands before boarding vehicles or aircraft.<br>b. Perform precombat inspections for water, ammunition, and communications equipment.<br>c. Ensure that soldiers relieve themselves and are well hydrated.<br>d. Ensure that a medic is moving with the force.<br>5. Ensure that a photographer records the event and gets pictures of agitators and leaders.<br>6. Request air coverage from helicopter (with FLIR camera).<br>7. Determine with task force headquarters if air movement is available and will be used. Initiate movement. |
| MP forces established on ground to deal with demonstration. | 1. Establish enough forces at the demonstration to physically win confrontation.<br>2. Ensure that there is an ample security force securing vehicles, rear, and flanks. Expect the unexpected.<br>3. Establish and ensure that demonstration leader knows consequences of not clearing road. Give a specific time to accomplish movement. Stress liability for damages caused by removing blockage from road. Encourage leader to avoid injuries and damages by moving people from road. Offer opportunity for full negotiations and talks if this is done. Try to prevent leader from loosing face. You will want continuous dialog to prevent this type of event.<br>4. "Mark" key agitators to be snatched by snatch teams (NCOs and junior leaders do this). Snatch teams are designated and prepared.<br>5. Clear flanks on side of leader negotiating with MWDs, in front of his line of military police. Military police keep shields at their sides and show force through presence, attempting to keep tempers cool.<br>6. Prepare to treat wounded and establish evacuation plan (medics).<br>7. Report final situation to higher headquarters before clearing road. |

## A Proposed Matrix for Dealing With Demonstrations (continued)

| Event | Actions (in priority order) |
|---|---|
| Blockage cleared. | 1. Report to task force headquarters.<br>2. Return snatch teams' detainees to task force headquarters. Photograph, question, and determine if detainees have outstanding charges. Return them to village as soon as is reasonable. Treat all detainees with dignity and respect.<br>3. Get accountability of personnel and equipment.<br>4. Establish follow-on meeting with local leaders. Discuss why this occurred and prevent reoccurrence. Ensure that leaders know how to contact local officials and task force headquarters with grievances before resorting to demonstrations.<br>5. Get a good estimate of damages and injuries.<br>6. Pull out excess forces as soon as possible, and push through backed-up traffic. Ensure that road shoulders are kept secure from rock throwers or other impediments.<br>7. Link support to town with behaviors. Ensure that local leaders understand that blocking roads and demonstrating without a permit has an associated cost. |
| Conditions restored. | 1. Increase patrolling and presence in area for immediate future.<br>2. Conduct AAR immediately with all battalion task force headquarters leaders and elements.<br>3. Establish lessons learned to improve response time and tactics, techniques, and procedures in your area of operations.<br>4. Review digital photos and capture biographical data and other information to improve intelligence understanding of key players/situations. Update task force headquarters intelligence section and subordinate elements.<br>5. Develop training plan addressing shortcomings or implementing improvements. |

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# Nonlethal Weapons Protect the Force

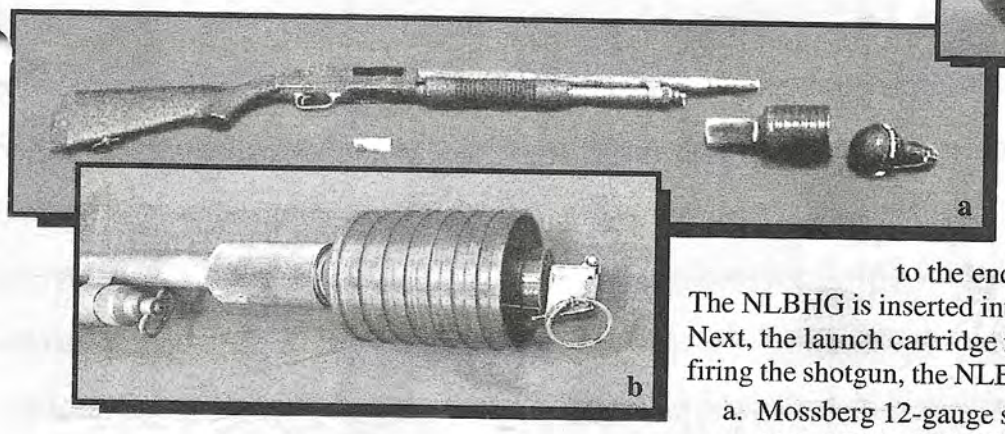
*Compiled by Major Bob Buzan and Sergeant First Class Raymond Spain*

### Nonlethal Bursting Hand Grenade (NLBHG)

The NLBHG, commonly referred to as the rubber ball grenade, is a hand-thrown or muzzle-launched multiple-projectile, flash-bang grenade with one hundred 25-caliber hard rubber pellets. After a 2.6-second delay, a one million candle power flash and 150-decibel bang will accompany the release of the one hundred rubber pellets in a 360-degree direction.

a. The NLBHG
b. Cutaway of the NLBHG (shown with charge)




### 12-Gauge Launch Cup

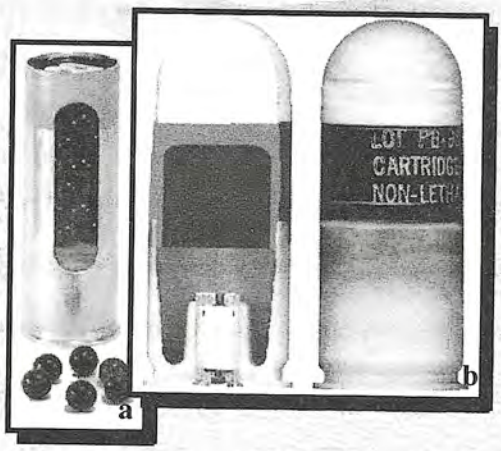
The 12-gauge launch cup extends the NLBHG range to out to 100 meters. The launch cup is attached to the end of the Mossberg 500A1 shotgun. The NLBHG is inserted into the launch cup and pin pulled. Next, the launch cartridge is loaded into the shotgun. Upon firing the shotgun, the NLBHG will be launched.

a. Mossberg 12-gauge shotgun, launch cartridge, launch cup, and the NLBHG
b. Launch cup with the NLBHG (in the cup) attached to the shotgun

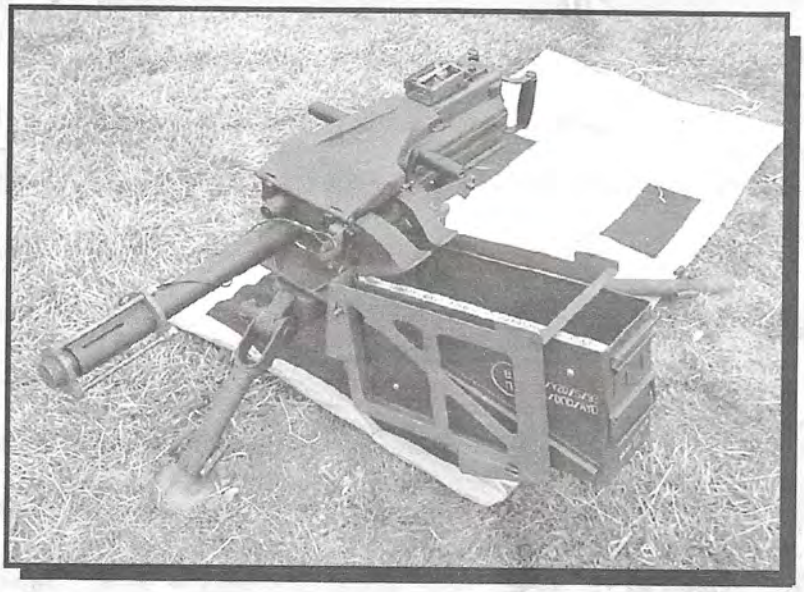
### 40-Millimeter Sponge Grenade and Crowd-Dispersal Cartridge (CDC)

The sponge grenade is a point target munition with a range of 10 to 50 meters. It has a single projectile made of hard plastic and foam rubber. The CDC consists of forty-eight 48-caliber rubber balls and is an area target munition with a range of 10 to 30 meters. Both rounds are fired from the M203.

a. M1029, 40-millimeter CDC (aka: Rubber Ball Round)
b. M1006, 40-millimeter Sponge Grenade



# Nonlethal Weapons Protect the Force



## MK19 Grenade Machine Gun (GMG)

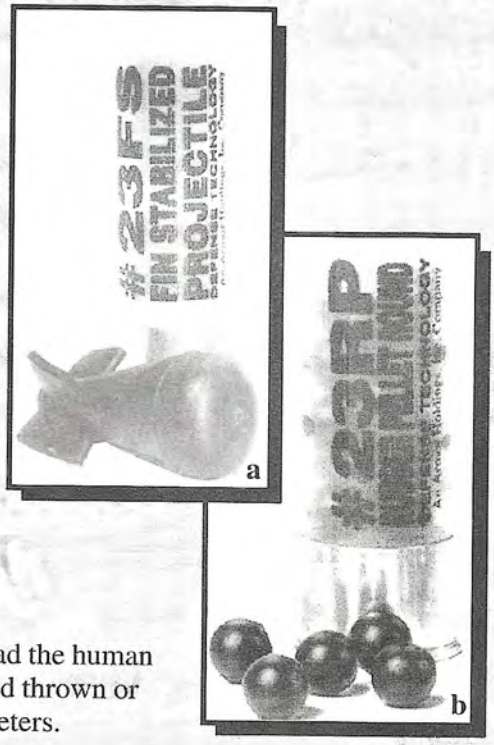
The nonlethal (NL) MK19 munitions are designed to provide a fully automatic NL capability with standoff. MK19 munitions are currently divided into two areas: short and long range. The short range is from 10 to 50 meters and the long range is from 50 to 500 meters. Payloads under consideration are multiple balls, fin-stabilized, and riot-control agents (RCAs). [Note the blank adapter in the photo. It is NOT a part of the NL munitions.]

## 12-Gauge Crowd-Dispersal Cartridge and Fin-Stabilized Cartridge

The 12-gauge CDC consists of twenty-three 23-caliber rubber balls and is an area target munition with a range of 10-20 meters. The 12-gauge Fin-Stabilized Cartridge is a point target munition with a range of 10 to 20 meters. It has a single projectile made of hard rubber. Both rounds are fired from the Mossberg 500 and 590 12-gauge shotguns.

a. M1013, 12-gauge Crowd-Dispersal Cartridge

b. M1012, 12-gauge Fin-Stabilized Cartridge




## Multisensory Grenade (MSG)

This flash-bang-type grenade is designed to overload the human senses of sight, sound, and smell. It is probably hand thrown or launched via a 12-gauge launching cup out to 90 meters.

a. The MSG in closed position.

b. The MSG in open position.



# Nonlethal Weapons Protect the Force

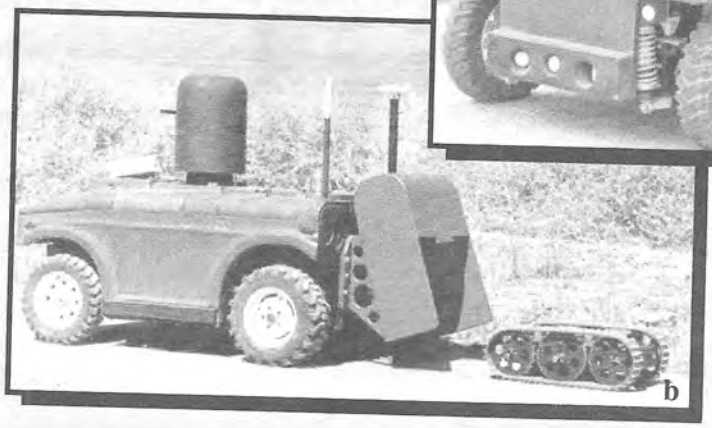
## Mobile Detection Assessment Response System (MDARS)

The MDARS is a semiautonomous mobile robotic platform with preprogrammable routes. It is able to assess and detect barriers, obstacles, products, and intruders with a sensor suite. It also provides the control operator with a closed-circuit television capability. The MDARS is designed to run for 12 hours, with a maximum speed of 30 kilometers per hour; detect out to 100 meters; and weigh 2,100 pounds. It could be configured with various NL payloads.

a. The MDARS
b. The MDARS with the smaller robot deployed



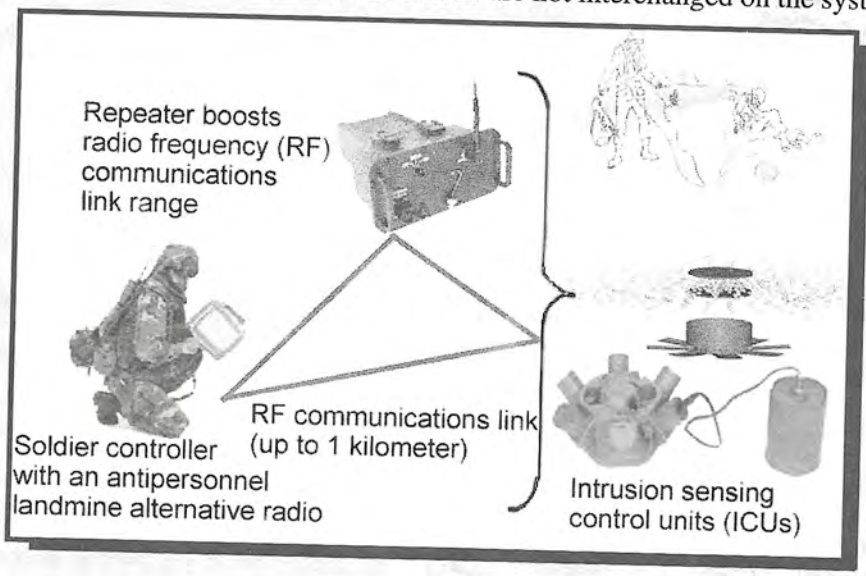
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## Hand-Emplaced Nonlethal Munition (HENLM)

The HENLM can employ a TASER® electro-muscular disruption weapon or RCA to deter noncombatants from entering an area. It can also be outfitted with lethal munitions, which requires a "man-in-the-loop" for command and control. Lethal and NL munitions are not interchanged on the system. The system can be radio-controlled, which sends information back to the operator as to the weapons status. It is reloadable with multiple payloads. It is a modular system that is recoverable and reusable.

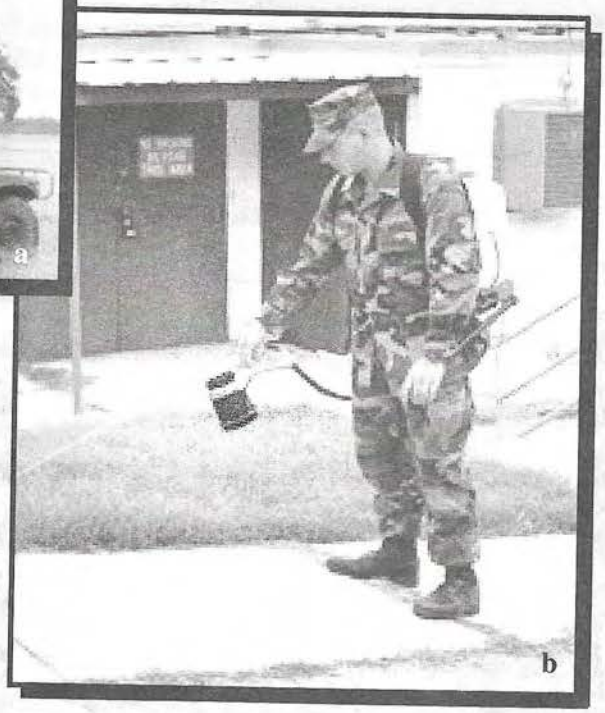



## Active Denial System (ADS)

The ADS uses millimeter-wave energy to stop, deter, and turn back an advancing adversary at relatively long ranges (publicly released to 750 meters). The ADS transmits a narrow beam of energy at the speed of light. The energy penetrates 1/64 inch into the skin, quickly heating the skin's surface. Within seconds, an individual feels an intense heating sensation. Shown is the hybrid-electric HMMWV model currently under development.




a


b

**Mobility Denial System (MDS)**

The MDS applies a substance (such as a slippery liquid) to a surface to cause a lack of traction, resulting in a failure to negotiate the area covered.

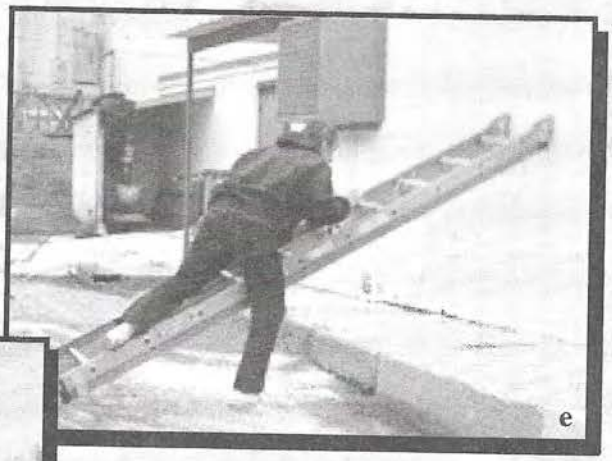
a. Vehicle-transportable system

b. Man-portable MDS

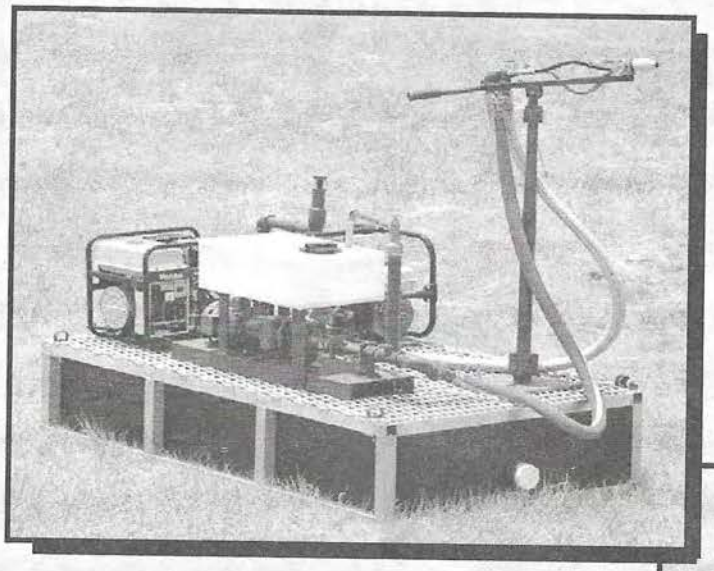
c and d. Demonstration of subject attempting to climb stairs sprayed with the MDS (note the safety strap in both photos).

e. Individual attempting to defeat the MDS

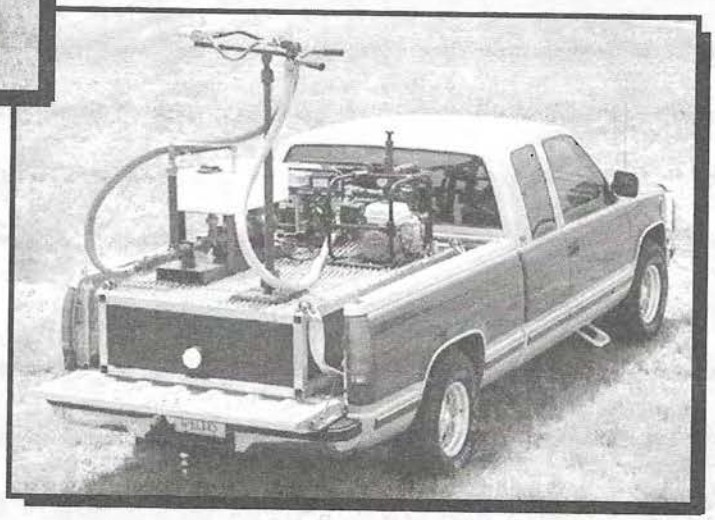

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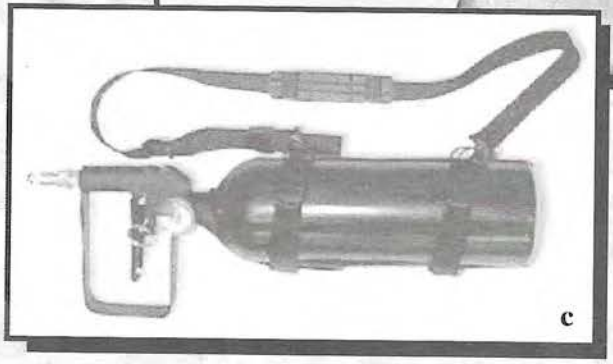
The vehicle-transportable MDS is a self-contained unit that can be mounted on a cargo HMMWV or larger vehicle.





A vehicle attempting to defeat the MDS becomes mired in the substance that was applied to the road surface.







## Items From the Nonlethal Capability Set (NLCS)

The NLCS is currently a 13-crate collection of munitions, protective gear, enhancement gear, and training devices for a 261-person control force to use in civil-disturbance-type operations. Work is being done to field a scaled-down version, 30-person set.

a. [left to right] Ballistic vest

Riot face shield, nonballistic, designed to protect the wearer's face from thrown objects and/or attacks. Compatible with weapon sighting and protective masks

36- inch solid oak baton, used defensively and offensively

Shin guard, nonballistic, protects the feet, shin, and knees

40-millimeter carrying pouch, which attaches to the load-bearing equipment/load-bearing vest and holds six 40-millimeter NL rounds in separate compartments

Portable bullhorn with siren alarm, range ¾ to 1 mile

M37 Midsize Riot-Control Disperser, the size of a standard fire extinguisher; uses compressed air to force RCAs out to 30 feet; can be refilled and recharged (c. enlargement)

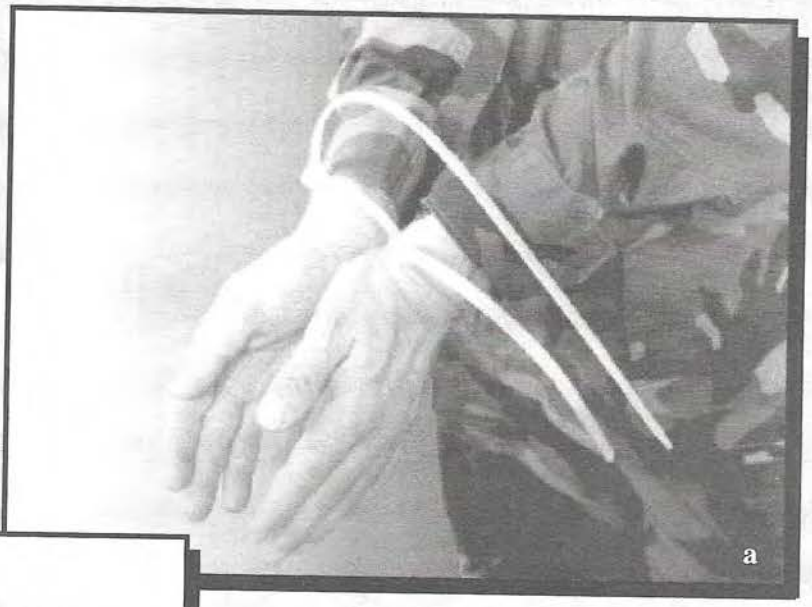
b. Shin guard

c. M37 Riot-Control Disperser

### Items From the NLCS

a. Flexicuffs—lightweight, disposable handcuffs—consist of a hard plastic band with a self-locking mechanism.

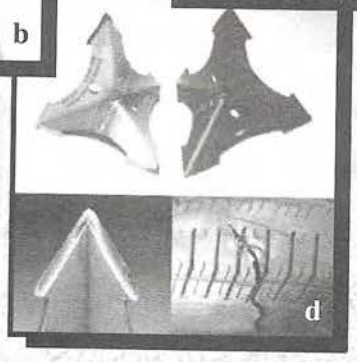
b. M5 Modified Crowd-Control Munition (MCCM), similar in design to the claymore mine, will stop, confuse, disorient, and/or temporarily incapacitate area targets. It delivers six hundred .32-caliber rubber balls as well as a flash-bang effect. Range is 5 to 15 meters.


a


b

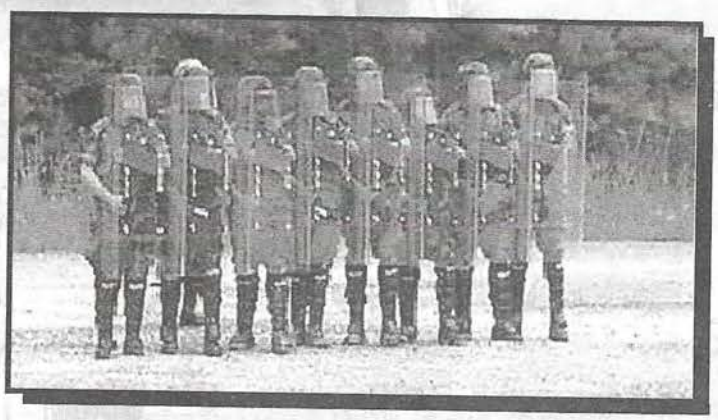


c

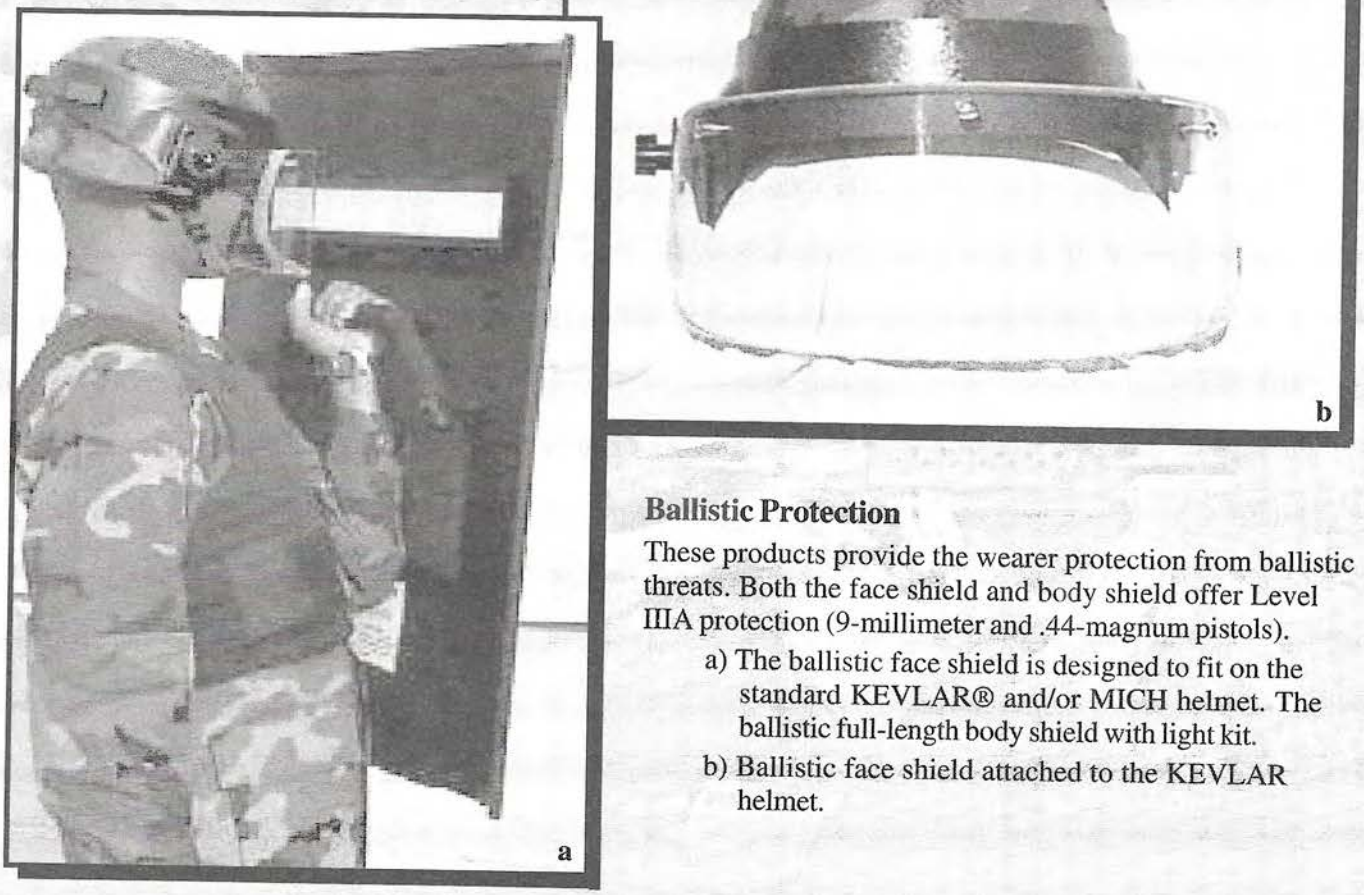

d

c. M84 Stun Hand Grenade. A reloadable, thrown grenade with a 2.5 million candle power flash, and a 175-decibel bang. Used as a distraction device.

d. Caltrops are four-pronged metal pieces, approximately 2 inches tall, that puncture tires or boots.



**Squad in Riot-Control Gear**
Riot face shields, riot body shields, and riot shin guards offer head-to-toe protection from nonballistic weapons.



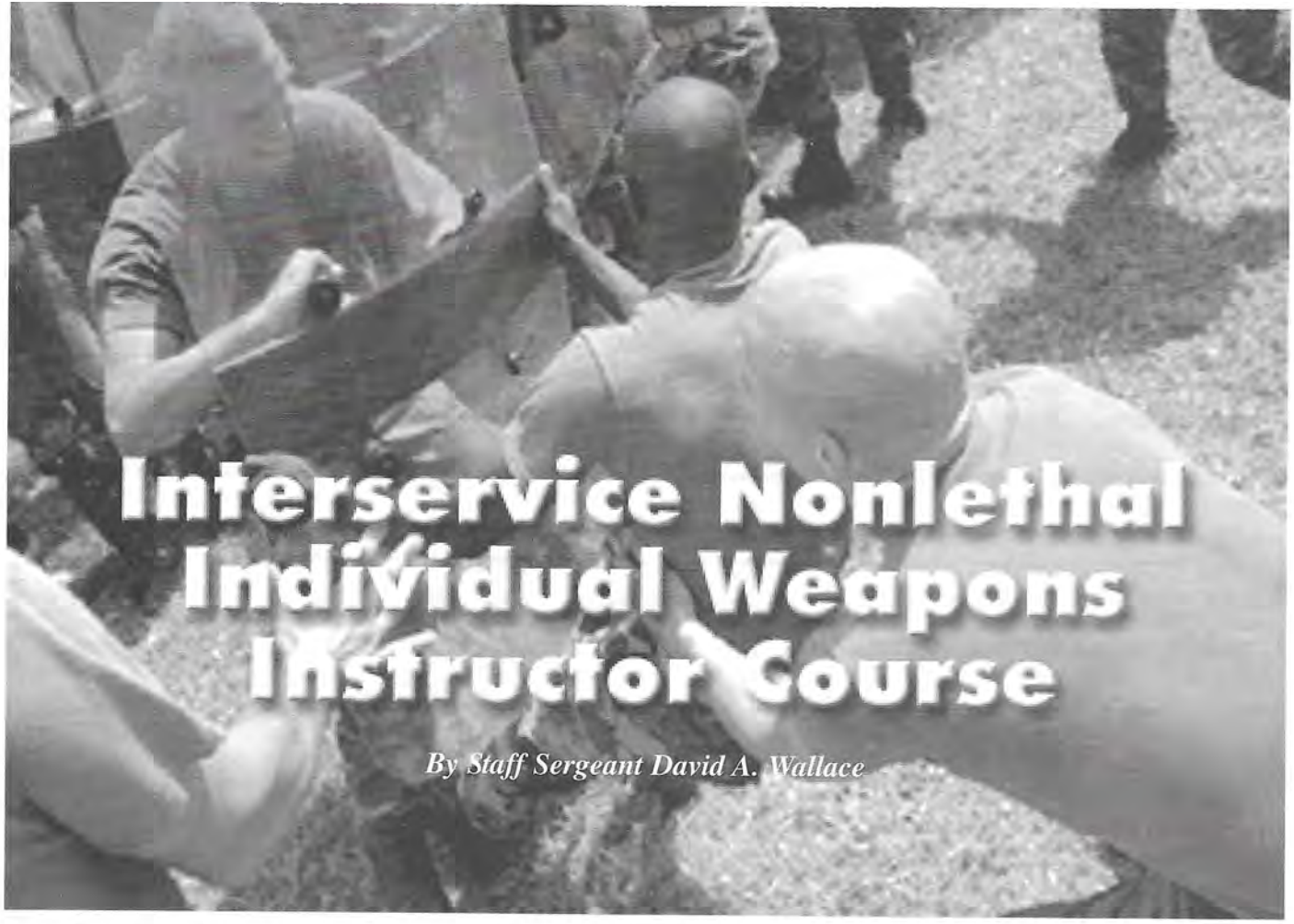
a

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**Ballistic Protection**
These products provide the wearer protection from ballistic threats. Both the face shield and body shield offer Level IIIA protection (9-millimeter and .44-magnum pistols).

a) The ballistic face shield is designed to fit on the standard KEVLAR® and/or MICH helmet. The ballistic full-length body shield with light kit.

b) Ballistic face shield attached to the KEVLAR helmet.



# Interservice Nonlethal Individual Weapons Instructor Course

*By Staff Sergeant David A. Wallace*

*Present and future Army missions call for a force that complements lethal force. That force is nonlethal weapons (NLWs). These provide commanders with alternatives to lethal force, but they will never replace lethal weapons nor will there ever be such thing as a "nonlethal [NL] mission." NLWs give commanders the opportunity to meet less than deadly resistance with less than deadly force.*

To proficiently use NLWs and become NLWs instructors, soldiers are required to attend the Interservice Nonlethal Individual Weapons Instructor Course (INIWIC) at Fort Leonard Wood, Missouri. As an interservice course, it is open to the five military branches and foreign countries participating in the U.S. security-assistance programs. Currently, INIWIC is an 11-day training program. The training cadre consists of one Marine Corps officer, three noncommissioned officers (two Marine Corps and one Army), and one civilian contractor. Annually, this diverse team trains approximately 300 service members and civilians.

To attend the course, soldiers' company commanders must select them to be NLWs instructors, and the soldier must have two years of time in service left upon graduation. It is recommended (but not required) that soldiers be graduates of the Instructor Training Course and be at the rank of sergeant through major.

An important aspect of INIWIC is the *oleoresin capsicum* (OC or pepper spray) module. After completing the course, soldiers are authorized to instruct and certify others in the use of OC. To be certified, soldiers complete a 3-hour block of instruction and a practical exercise. This practical exercise exposes the soldier's face to a direct spray of OC. Immediately after being sprayed, soldiers must complete a fight-through obstacle-course drill consisting of five different stations. This practical exercise gives soldiers confidence that, if exposed, they can fight through the physiological and psychological effects of the spray and still be able to take charge of the situation.

INIWIC graduates will have a two-fold mission upon returning to their units. First, they will be able to train others about the Nonlethal Capability Set (NLCS) and NLWs. Second, they can act as advisors to their commanders, ensuring that commanders are familiar with the NLCS tools and their possible tactical applications.

The course is mentally and physically demanding. The table on page 42 briefly describes the twelve

subject areas of the program of instruction. There are four written examinations, two performance-oriented evaluations, an evaluated written training plan assignment, and a field-training exercise. Students must score at least 80 percent on the written test to pass.

Because this is a train-the-trainer course, performance-oriented evaluations require soldiers to "teach back" to the course cadre by presenting a method, or a portion of a lecture, that has been modeled for them. Writing training plan evaluations focuses on the soldier's ability to implement a training plan that instructs leaders and users about NLWs and the NLCS. Field-training exercises are group-evaluated scenarios encompassing everything taught and learned throughout the course.

Reservation information is available through the Army Training Requirements and Resource System. Sergeant Major Charles Slider (DSN 676-7891), the U.S. Army Military Police School's Directorate of Training sergeant major, is the primary point of contact for course allocations.

**Program of Instruction Subject Areas**

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| Techniques of Military Instruction | *Explains the basics of effective instruction.* |
| Use of Force/Force Continuum | *Trains soldiers to recognize where NLWs fit along the force continuum.* |
| Communication Skills | *Focuses on dealing with angry and aggressive people.* |
| Crowd Dynamics | *Presents behavioral aspects of crowds during civil disturbances.* |
| Empty-Hand Control Techniques | *Teaches individual defensive tactics that protect control-force members and restrain resistant subjects.* |
| Riot Baton Techniques | *Teaches the soldier defensive tactics with the expandable straight baton.* |
| Military Operations Other Than War | *Presents the concept and describes how it differs from a common war-type mission.* |
| Rules of Engagement | *Discusses how the rules of engagement influence the use of force.* |
| OC | *Equips the soldier with the capabilities to properly instruct others in its use.* |
| Formations | *Presents ideas about conducting riot-control formations.* |
| Tactical Considerations | *Demonstrates how to employ NLWs in a tactical situation.* |
| Munitions | *Teaches students the capabilities and characteristics of current NL munitions in the capability sets. Soldiers become familiar with the types, capabilities, and characteristics of NL munitions by firing them during a live-fire range.* |

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# Nonlethal Force and Rules of Engagement

*By Staff Sergeant Paul K. Shupe*

*A study of materials available on the concepts, training, and actual application of deadly force by U.S. service members reveals a strong level of confidence and competence. Despite what the record indicates, healthy debate and discussion about the use of deadly force continues. This dialogue is important and healthy because it adds to the overall body of knowledge on the subject. It provides useful and relevant information and considerations when the rules of engagement (ROE) and rules for the use of force (RUF) are crafted, trained, and applied. We do not have an equally rich resource to draw from when it comes to the concepts, training, and actual application of nonlethal (NL) force used in self-defense, force protection, and mission accomplishment within the ROE or RUF.*

According to the *Deployed Marine Air-Ground Task Force Judge Advocate Handbook* (MAGTF JA Handbook), "an understanding of ROE fundamentals is necessary before delving into more sophisticated ROE issues.... ROE basics...can be self-taught." The recommended course of ROE self-study contains six references, and one of them is the *Rules of Engagement (ROE) Handbook for Judge Advocates* (ROE Handbook). In a chapter entitled "ROE Minefields," the handbook discusses issues that have traditionally been problem areas in the drafting, training, and application of ROE. Nonlethal weapons (NLWs) considerations are included in that chapter. The impression that can be drawn from this material is that NLWs (and their use) are considered "sophisticated ROE issues."

The MAGTF JA Handbook observes that service members want to know what level of force they can use at what time, and ROE source authorities simply do not provide the level of detail that service members desire. In ROE/RUF training, service members often present fact-specific scenarios and ask for black-and-white answers to gray questions, such as what levels of force are appropriate in complicated situations. Using the standing rules of engagement (SROE) as an example, the best answer often involves a vague discussion of making reasoned evaluations of hostile acts and hostile intent and proportionality (based on all the facts known at the time). The best solution undoubtedly will be a product of a lawyer/operator dialogue.

This article provides a frame of reference that may make the employment of NLWs and options more basic than sophisticated, while mitigating or removing the association of NLWs with "ROE minefields." The use of NL force is basic, and its limitations provide a clear map with which to navigate the terrain. In meeting its purpose, this article seeks to meaningfully add to the lawyer/operator dialogue as we all endeavor to discover the best solutions.

To have a meaningful dialogue on this subject, the terms of reference must be defined and agreed to; this has already been done for us. The Chairman, Joint Chiefs of Staff Instruction 3121.01A, *Standing Rules of Engagement for U.S. Forces,* establishes Secretary of Defense-approved SROE implementing the inherent right of self-defense and providing guidance for the application of force for mission accomplishment. Fundamental policies and procedures governing action to be taken by U.S. force commanders during military operations and contingencies are specified. The SROE apply to U.S. forces during military attacks against the United States and military operations, contingencies, and terrorist attacks occurring outside the territorial jurisdiction of the United States. Peacetime operations conducted by the U.S. military within its own territorial jurisdiction are governed by use-of-force rules contained in other directives, or on a case-by-case basis for specific missions.

In the absence of superseding guidance, the SROE establish fundamental policies and procedures governing the actions to be taken by U.S. force commanders in the event of a military attack against the United States (see Table 1, page 44). The SROE are intended to—

- Implement the right of self-defense, which is applicable worldwide to all echelons of command.
- Provide guidance governing the use of force consistent with mission accomplishment.

*Table 1. SROE Definitions*

**Inherent Right of Self-Defense:** A commander has the authority and obligation to use necessary means available and to take appropriate actions to defend that commander's unit, and other U.S. forces in the vicinity, from a hostile act or demonstration of hostile intent. Neither these rules, nor the supplemental measures activated to augment these rules, limit this inherent right and obligation. At all times, the requirements of necessity and proportionality, as amplified in these SROE, will form the basis for the judgment of the on-scene commander as to what constitutes an appropriate response to a particular hostile act or demonstration of hostile intent.

**Unit Self-Defense:** The act of defending a particular U.S. force element, including individual personnel thereof and other U.S. forces in the vicinity, against a hostile act or demonstrated hostile intent.

**Individual Self-Defense:** The inherent right to use the necessary means available and to take all appropriate actions to defend oneself and U.S. forces in one's vicinity from a hostile act or demonstrated hostile intent. Commanders have the obligation to ensure that individuals within their respective units understand and are trained on when and how to use force in self-defense.

**Hostile Act:** An attack or other use of force against U.S. forces. It is also force used directly to preclude or impede the mission and/or duties of U.S. forces, including the recovery of U.S. personnel and vital U.S. government property. A hostile act is behavior that is, by its definition and nature, direct, emphatic, and unequivocal. Moving away and down a scale from a hostile act is behavior that is clearly hostile intention. Between clearly hostile intent behavior and no threat perceived or present is that challenging gray area, which requires discipline, judgment, and careful attention to the totality of the circumstances.

**Hostile Intent:** The threat of imminent use of force against U.S. forces. It is also the threat of force to preclude or impede the mission and/or duties of U.S. forces, including the recovery of U.S. personnel or vital property. The context of hostile intent is imminent and demonstrated or exhibited. Imminent does not necessarily mean "immediate" or "instantaneous."[1] The logic of responding to hostile intent is to preempt a hostile act. The hostile intent must be demonstrated or exhibited by behavior. In the absence of specific criteria, hostile intent is a determination based on behavior and the totality of the circumstances surrounding the behavior—the context of the behavior. Hostile intent may be characterized as behavior that, if not responded to, becomes hostile action. The challenge in using force based on hostile intent is "when" and "how." The when is based on necessity, and the how is based on proportionality. Responding too soon risks misinterpreting the behavior, and responding too late is a moot point; the hostile intent would have become hostile action. This indicates that there are thresholds between a hostile act, hostile intent, and no threat perceived.

**Elements of Self-Defense:** Application of force in self-defense requires the following two elements:

*Necessity:* When a hostile act occurs or when a force exhibits hostile intent.

*Proportionality:* When force is used to counter a hostile act or demonstrated hostile intent must be reasonable in intensity, duration, and magnitude to the perceived or demonstrated threat based on all facts known to the commander at the time.

**Means of Self-Defense:** All necessary means available and all appropriate actions may be used in self-defense. The following guidelines apply for individual, unit, national, or collective self-defense:

*Attempt to De-Escalate the Situation:* When time and circumstances permit, the hostile force should be warned and given the opportunity to withdraw or cease threatening actions.

*Use Proportional Force to Control the Situation:* When the use of force in self-defense is necessary, the nature, duration, and scope of the engagement should not exceed that which is required to decisively counter the hostile act or demonstrated hostile intent.

*Attack to Disable or Destroy:* An attack to disable or destroy a hostile force is authorized when such action is the only prudent means by which a hostile act or demonstration of hostile intent can be prevented or terminated. When such conditions exist, engagement is authorized only while the hostile force continues to commit hostile acts or exhibit hostile intent.

- Be used in peacetime operations other than war, during transition from peacetime to armed conflict or war, and during armed conflict in the absence of superseding guidance.

Figure 1 depicts the clarity and relationship between *hostile acts, hostile intent,* and *no threat.* Depicted as a triangle, the base represents the majority of behavior a service member observes and is exposed to—*no threat. No-threat* behavior is common, ordinary human activity. Moving up, the triangle begins to narrow where behavior draws the attention of service members because of the perception of possible *hostile intent.* Moving up some more, into the *hostile intent* portion of the triangle, the area narrows and the color darkens as intent behavior becomes more clearly defined and certain. A definite line is crossed when intent becomes action. A *hostile act* represents the smallest area of the triangle, as action is direct, definite, and unequivocal. The area just below *hostile act* represents clear and definite *hostile intent* based on the totality of the circumstances.



*Figure 1. Threat behavior*

Academic debate sometimes occurs on whether or not a certain behavior represents *hostile intent* or a *hostile act.* The critical aspect of that debate is not in the differences or nuances between the two in observing the same behavior but in the necessity to use force proportionally to the circumstance. A hostile act and hostile intent pull the same trigger of necessity. Threat and proportionality are a matter of balance with the stated point of balance being proportional force that decisively counters the threat. To be able to do this, an understanding of the different types of threats must be established as well as what common human experience indicates is the most reasonable means to proportionally and decisively counter those threats.

Regardless of the circumstances—the type of military operation, mission, or activity and the ROE/use of force—the use of deadly force by service members has always had to be within a defined and clear criteria. Deadly force is "force that a person uses causing, or that a person knows or should know would create a substantial risk of causing, death or serious bodily harm."[2] The use of deadly force by a service member has a very high and very specific threshold. Tables 2[3], 3[4], and 4 (page 46) outline behavior-response information such as typical threat-resistant behavior and force-response options.

The use of nondeadly or NL force has a very low and nonspecific threshold. It is Department of Defense policy that "nonlethal weapons, doctrine, and concepts of operation shall be designed to reinforce deterrence and expand the range of options available to commanders. Nonlethal weapons should enhance the capability of U.S. forces to accomplish the following objectives: discourage, delay, or prevent hostile actions; limit escalation; take military action in situations where use of lethal force is not the preferred option; better protect our forces; and temporarily disable personnel. The availability of nonlethal weapons shall not limit a commander's inherent authority and obligation to use all necessary means available and to take all appropriate action in self-defense. Nonlethal weapons shall not be required to have a zero probability of producing fatalities or permanent injuries. However, while complete avoidance of these effects is not guaranteed or expected, when properly employed, nonlethal weapons should significantly reduce them as compared with physically destroying the same target. Nonlethal weapons may be used in conjunction with lethal weapon systems to enhance the latter's effectiveness and efficiency in military operations. This shall apply across the range of military operations to include those situations where overwhelming force is employed."[5] Within the context of this article, the stated policy applies to NLWs, NL options, tactics, techniques, and procedures. Implied, but not specifically stated, is the intent of NL tactics and techniques to physically control or otherwise restrain another person (prevent hostile actions).

Deadly force's high and specific threshold and NL force's low and nonspecific threshold is apparent when reviewing the most commonly used force continuums and ROE mnemonic devices.[6] Deadly force occupies a specific and clear space in force continuums and ROE mnemonics. A notable and very public debate took place in the military print media regarding this issue.[7] The debate will not be joined here. Force continuums and mnemonics are tools for training the ROE/use of force that are meant to reflect law, policy, and the commander's intent. They are generally valuable and useful tools in training use-of-force decision-making; however, they are generally misunderstood in their application and use.

One of the most commonly used and widely accepted force continuums, or use-of-force models (Figure 2, page 47), shows deadly force occupying the highest level on the model. All other force below deadly is NL. This model is used to train personnel in the use of force at the Federal Law Enforcement Training Center, the U.S. Marine Corps, the Air Force, and the Interservice Nonlethal Individual Weapons Instructor Course.

*Table 2. Typical Categories of Threat-Resistance Behavior*

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| **Cooperative-Compliant:** Individual/group responds appropriately to service member presence, direction, and control. |
| **Passive Resistance:** Individual/group refuses, with little or no physical action, to cooperate with directions. This can assume the form of a verbal refusal or consciously contrived physical inactivity. |
| **Active Resistance:** Individual/group uses nonassaultive physical action to resist service member's direction. Examples would include pulling away to prevent or escape control or overt movements, such as walking toward or away from. Running away is another example of active resistance. |
| **Assaultive/Bodily Harm:** Individual/group attempts to apply (or applies) force to service members; attempts or threatens, by an act or gesture, to apply force to any service member, if individual has, or causes other service members to believe upon reasonable grounds that individual has, present ability to effect an individual's purpose (to assault). Examples include kicking and punching but may also include aggressive body language that signals the intent to assault. |
| **Assaultive/Serious Bodily Harm or Death:** Individual/group exhibits actions that a service member reasonably believes are intended to (or are likely to) cause serious bodily harm or death to any service member. Examples include assaults with a knife, stick, or firearm, or actions that would result in serious injury to any service member. |

*Table 3. Typical Categories of Force-Response Options*

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| **Cooperative Controls/Service Member Presence (Show of Force):** While not strictly a use-of-force option, the simple presence of service members can affect both the individual/group and the situation. |
| **Communication:** Service members can use verbal and nonverbal communication to control and/or resolve the situation. |
| **Contact Controls/Physical Control:** There are two levels of physical control: soft and hard. In general, physical control means any physical technique used to control the individual/group that does not involve using a weapon. Contact controls are soft techniques that are control-oriented and have a lower probability of causing injury. |
| **Compliance Techniques/Physical Control:** Compliance techniques are "hard" techniques that are intended to stop an individual/group's behavior or to allow application of a control technique and have a higher probability of causing injury. The technique includes countermeasures designed to overcome the subject's degree of resistance, such as using pain compliance applications and chemical irritants. |
| **Defensive Tactics:** These are countermeasures designed to cease the subject's nonlethal assault, regain control, and ensure continued compliance. This includes baton strikes, escape techniques, and blocking defenses. |
| **Deadly/Lethal Force:** This use-of-force option involves the use of any weapons or techniques that are intended to, or are reasonably likely to, cause serious bodily harm or death. |

*Table 4. Behaviors and Related Responses*

| Individual/Group Behavior | Service Member Response |
|---|---|
| Cooperative/Compliant | Cooperative Controls |
| Passive Resistance | Contact Controls |
| Active Resistance | Compliance Techniques |
| Assaultive/Bodily Harm | Defensive Tactics |
| Assaultive/Serious Bodily Harm or Death | Deadly/Lethal Force |

Force continuums are instructive when training use-of-force decision-making and depicting proportionality when the desire is to decisively counter a level of threat or resistance. In this context, resistance means force used to preclude or impede the mission and/or duties of U.S. forces. The reasoning embedded in a true force continuum is that there are broad categories of physical threats and types of resistance. These threat-resistance categories have corresponding categories of force-response options to overcome (decisively counter) the threat-resistance reasonably (proportionately).

Force continuums and use-of-force models have textual references that explain how they work. Bright lines do not divide the categories because there are varying degrees of intensity within the categories that are situational and matters of reasonable perception. The responses are meant to keep the service member in a position of control or to regain control. In this context, control is a function of defense and gaining or maintaining the position of advantage. Force continuums and use-of-force models provide a framework for necessity, proportionality, reasonable perception, and decisive response to overcome the threat behavior.

The concepts of gradualism and minimalism are antithetical to the reasoning behind force continuums, use-of-force models, and the SROE. When self-defense is the issue, the hostile act or hostile intent must be decisively countered using proportional force. Gradualism and minimalism (with respect to the use of force in self-defense) are dangerous experiments risking the personal safety of those threatened and demonstrates indecisiveness and lack of resolve. NLWs; tactics, techniques, and procedures; and equipment provide a means to respond decisively and proportionately while maintaining personal safety in situations where deadly force is not required or is contraindicated.

NLWs provide a "forgiving" means of determining hostile intent (or forcing an adversary to declare this intent) without unreasonable risks. In Somalia, a service member shot and killed a boy who was approaching service members while holding a small box. The boy failed to heed, hear, or understand verbal warnings to stop. Based on the totality of circumstances, a service member shot and killed the boy. The box contained candy. The service members had only two options available, verbal warnings and deadly force. The situation represents that true gray area of determining hostile intent. Hindsight is always 20/20, but if NL options had been available to the service member, the situation might have ended differently. The boy's intent could have been determined with the impact of 12-gauge or 40-millimeter NL projectiles. The boy's continued advance after being struck with a 12-gauge fin-stabilized NL projectile would have provided a certainty as to his intent. If he had staggered away after being struck, the service members would have remained safe, and the boy's injury, a bruise, would have faded.

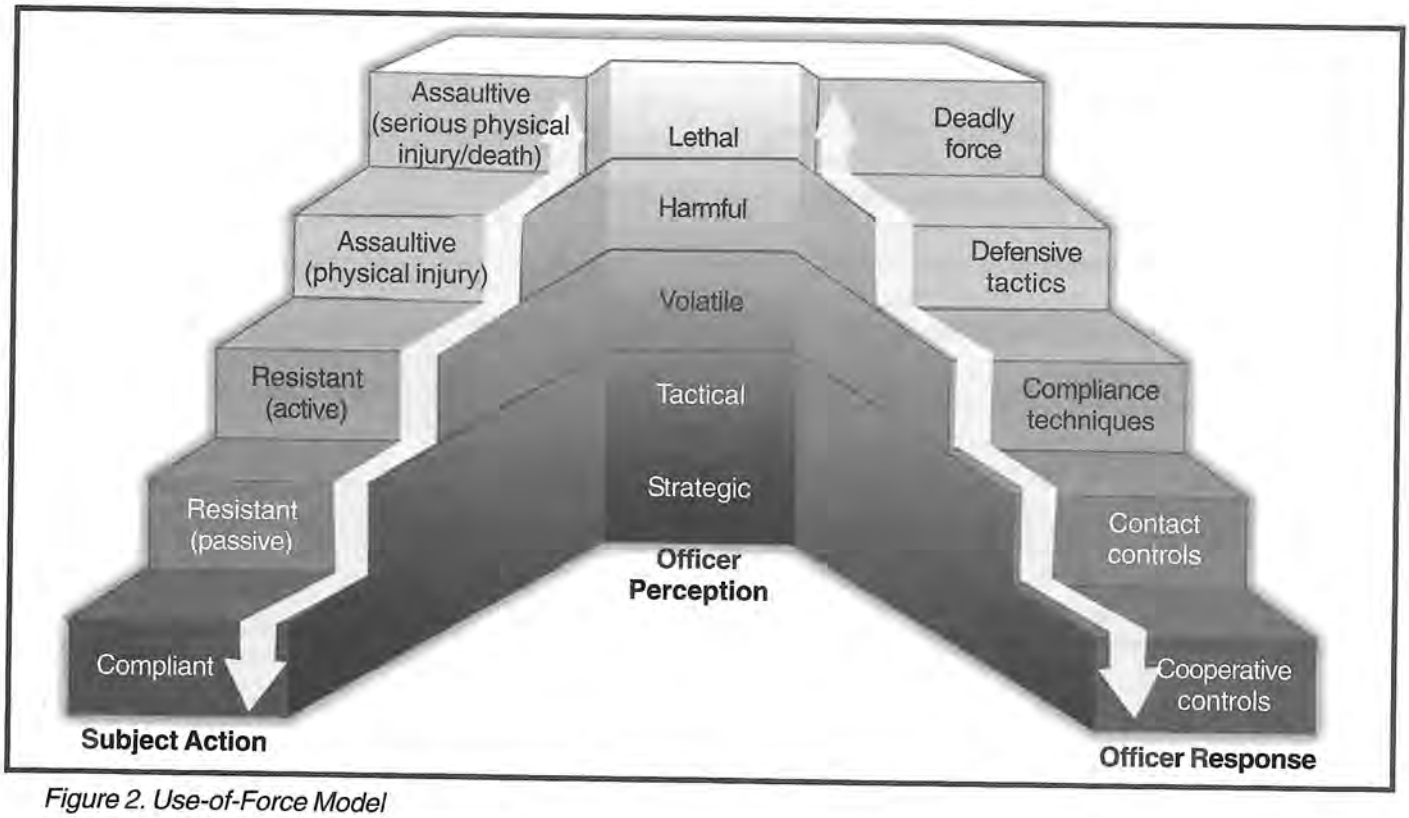



*Figure 2. Use-of-Force Model*

NLWs provide a means to engage early and decisively. A ROE training vignette describes a series of actions performed by a woman in a crowd. The woman has what appears to be a Molotov cocktail and is going through a series of actions to prepare it for use. At different stages, service members are asked if they can engage with deadly force. It is only when hostile intent is clear—the Molotov is lit—that service members are told they can now employ deadly force. Applying deadly force against an individual in a crowd or mob is problematic and unforgiving. If a NL option were provided in the vignette, service members would not have to wait once they had reasonable belief that the bottle was intended to be used against them. A 40-millimeter nonlethal projectile impacting the potential Molotov thrower would have minimized the risk of it being thrown and the risks of unintended casualties in the crowd from the use of deadly force.

This same concept would apply to those who appear at the scene of disturbances and public disorders carrying rocks or other hand-thrown missiles, or who are gathering such material. What is the natural and probable purpose of holding a rock or having a bag or bucket of items at the scene of a disturbance or disorder? The possession of such items in the circumstance demonstrates hostile intent. After verbal warnings to put the items down, the individuals should be engaged with NLWs, if the circumstance permits. NLWs impact force adversaries to determine how committed they are to continuing to hold a rock or pick up a rock in the vicinity of a service member or otherwise demonstrating hostile intent.

Necessity to act can be a dilemma. A hostile act or demonstrated/exhibited hostile intent with a board or edged weapon at 3 meters has a more immediate impact on the determination of necessity than the same behavior at 30 meters. Distance can make the difference between a hostile act and a demonstration of hostile intent. One situation may require the instant application of deadly force, the other deliberate application of NL force.

The ROE Handbook contains over 200 vignettes for training and imparting ROE and use of force. A note that is included there states, "Do not rely on the solutions accompanying these vignettes." This is wise advice. Many of the solutions to the vignettes fail to correctly interpret the meaning of a hostile act, hostile intent, use of proportional force, and a decisive counter. The solutions to the vignettes do not leverage NL options when deadly force is not justified. Solutions are generally provided as either "deadly force is authorized," or "deadly force is not authorized," shoot or don't shoot. These options taint the training and interpretation of a hostile act/hostile intent. Being surrounded by an indigenous group of angry young men is a tactical threat that triggers hostile act/hostile intent. If that same group begins to throw rocks, bottles, and sticks, a hostile act exists. No, these are not deadly force situations; but proportionally decisive force is required, and NL options provide the appropriate response.

NLWs and NL force options bridge a critical gap between doing nothing in the presence of nondeadly hostile actions or clear/unclear hostile intentions and being proud in the aftermath of "showing restraint" in not resorting to deadly force, while the right of self-defense was forfeited by the lack of viable, decisive options. Taking the inherent right and obligation to use force in self-defense to heart means that training service members in NL tactics, techniques, and procedures is not an option but a mandate.

**Endnotes**

[1]Chairman, Joint Chiefs of Staff Instruction 3121.01A, *Standing Rules of Engagement for U.S. Forces,* (partially classified document), 15 January 2000.

[2]U.S. Department of Defense Directive 5210.56, *Use of Deadly Force and the Carrying of Firearms by DOD Personnel Engaged in Law Enforcement and Security Duties*, November 2001, change 1, 24 January 2002.

[3]The listed behaviors are based on the "Integrated Force Management–Use-of-Force Model" developed by Professor G. Connor, University of Illinois Police Training Institute, and the staff of the Federal Law Enforcement Training Center, 1991.

[4]G. Connor and the Canadian National Use-of-Force Framework.

[5]U.S. Department of Defense Directive 3000.3, *Policy for Nonlethal Weapons*, 9 July 1996.

[6]M. Martins, *Rules of Engagement for Land Forces: A Matter of Training, Not Lawyering*, 143 Military Law Review, 1, 24, 1994.

[7]W. Hays Parks, *Deadly Force Is Authorized*, U.S. Naval Instructional Procedure, 2001.

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Center for Law and Military Operations, *Deployed Marine Air-Ground Task Force Judge Advocate Handbook*, 2002.

Center for Law and Military Operations, *Rules of Engagement Handbook for Judge Advocates*, 2000.

Chairman, Joint Chiefs of Staff Instruction 3121.02, *Rules on the Use of Force by DOD Personnel Providing Support to Law Enforcement Agencies Conducting Counterdrug Operations in the United States*, 31 May 2000.

M. Martins, *Deadly Force Is Authorized, but Also Trained*, Army Law, September/October 2001.

U.S. Air Force Instruction 31-207, *Arming and Use of Force by Air Force Personnel*, 1 September 1999.

U.S. Marine Corps Order 5500.6F, *Arming of Security and Law Enforcement Personnel and Use of Force*, 20 July 1995.

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# Nonlethal Mortar Program

*By Mr. Robert Worth*

In 1998, the Department of Defense's Joint Nonlethal Weapons Directorate (JNLWD) recognized the need for a weapon system capable of delivering nonlethal (NL) payloads at a distance in excess of 100 to 200 meters. To meet this need, they solicited private-sector contract bids using a broad agency announcement. Of the many responses received, only two companies won contracts: M2 Technologies (M2) and United Defense. Both companies proposed mortar solutions, and the contracts were awarded in May 1999.



*Lightweight rounds with single parachute*

The biggest design challenge facing M2 and United Defense was a contract requirement stipulating that no portion of the payload or mortar cartridge could impact the ground with kinetic energy (KE) greater than 58 foot-pounds. Since existing mortars weigh several pounds and typically impact at greater than 100 meters per second, positive design features reducing the KE had to be considered. M2's initial approach was to make the cartridge case combustible by using compressed felt fiber (CFF), a material readily available in ammunition.

United Defense, teaming with two Army research laboratories (ARLs) and the Soldier and Biological Chemical Command, looked for ways to reduce the cartridge weight by substituting composite parts for metal ones and deploying parachutes that slow the spent cartridge's descent. M2 concluded that CFF would not survive launch without significant structural enhancement via doping agents (agents added to a pure material to alter a physical property of the material), and even that would be a marginal improvement.

In a series of proof-of-principle firings at Edgewood Arsenal in June 2000, United Defense and the ARLs demonstrated that an 81-millimeter mortar cartridge (weighing about 50 percent as much as existing mortars of that caliber) could be flown over 1,500 meters. However, they encountered difficulties with the two parachutes that controlled their descent.



*Round recovered after firing*

A short time later, the JNLWD asked the Tank-automotive and Armaments Command–Armament Research, Development, and Engineering Center (TACOM–ARDEC) to assume responsibility for subsequent NL mortar efforts. An integrated product team (IPT) was then formed, and the work continued. The IPT considered several KE-reduction techniques, and prototype hardware was built and lab-tested.

A new series of firings was held from November 2002 to January 2003; not only KE reduction but also payload deployment was evaluated. The TACOM–ARDEC IPT established pre-Milestone A exit criteria (such as range, accuracy, and ability to deliver different types of payloads with an appreciable area coverage) and demonstrated that they could meet or surpass the criteria in the firing test programs. The next step of the development program is Milestone A.

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*Mr. Worth retired from TACOM–ARDEC in 2001. Before that, he was a development project officer in ARDEC's Mortars Team that was responsible for mortar weapons and new systems. He headed the Nonlethal Mortar Pre-Milestone A Program. Mr. Worth now serves as a program consultant and has a bachelor's in aeronautical engineering and a master's in mathematics.*

# M1 Portable Vehicle-Arresting Barrier

*By Ms. Linda Chico*

Since 28 May 2002, the Department of Defense's (DOD's) first nonlethal (NL) vehicle-stopping system, the M1 Portable Vehicle-Arresting Barrier (PVAB), is available for fielding as part of the Army's Nonlethal Capability Set (NLCS). The Army's Program Manager for Close Combat Systems (PM CCS) manages this joint-service-developed item with life-cycle engineering support provided by the U.S. Army Tank-automotive and Armaments Command–Armament Research, Development, and Engineering Center (TACOM–ARDEC).



*M1 PVAB*

## System Description

The M1 PVAB has numerous advantages. It is lightweight, weighing less than 900 pounds in its unpackaged configuration. It is deployable and operational in all climates and terrains—arctic, desert, rural, and urban. Three service members can emplace it rapidly across a single- or double-lane road (in less than two hours). When command-activated, it can go from the standby to capture mode in less than two seconds and safely and reliably capture a 7,500-pound vehicle traveling at 45 miles per hour without causing injury to vehicle occupants or damaging the vehicle.

## System Operation

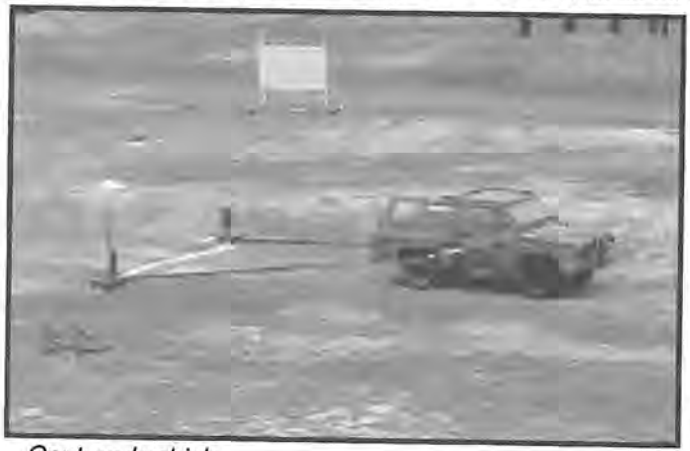
Operator-controlled tethered pendant activation initiates a low-pressure air system, causing the rapid extension of two metal telescoping masts. The capture net attached to the masts is raised out of the bump modules that are used for storage/protection in the standby position. The net is attached to the brake box's payout reels. Upon vehicle engagement, the caliper engages the rotor and provides a controlled braking force. Tension is applied to the capture lines as the vehicle proceeds forward. The rear capture line entangles the vehicle's rear axle and maintains tension on the net, preventing both passenger and vehicle escape. Four anchor points secure the system.

## System Applications

The M1 PVAB, like other NL capabilities, was developed as part of the DOD Joint Nonlethal Weapons Program initiative to equip the joint services with NL capabilities. This will provide users with alternatives to lethal force when engaged in military operations other than war, such as peacekeeping and stability and support operations or layered defense for force protection. The first twenty systems are currently available for use in the Army's NLCS. On 24 May 2000, the M1 PVAB was demonstrated to former Secretary of Defense William Cohen as part of his visit to TACOM–ARDEC. The Secretary was impressed with the system's ability to stop a vehicle and went so far as to endorse the system by stating, "We need to get more of these in[to] the field."

## Conclusion

The M1 PVAB provides the joint services with an instant checkpoint/perimeter countervehicle capability that can be fully operational soon after entering an area of operations. The hostile intent of a vehicle's occupants may not always be known, but the vehicle must be stopped nevertheless. It is a versatile force protection system that effectively denies intruder entry to an area while minimizing casualties and damage to vehicles.

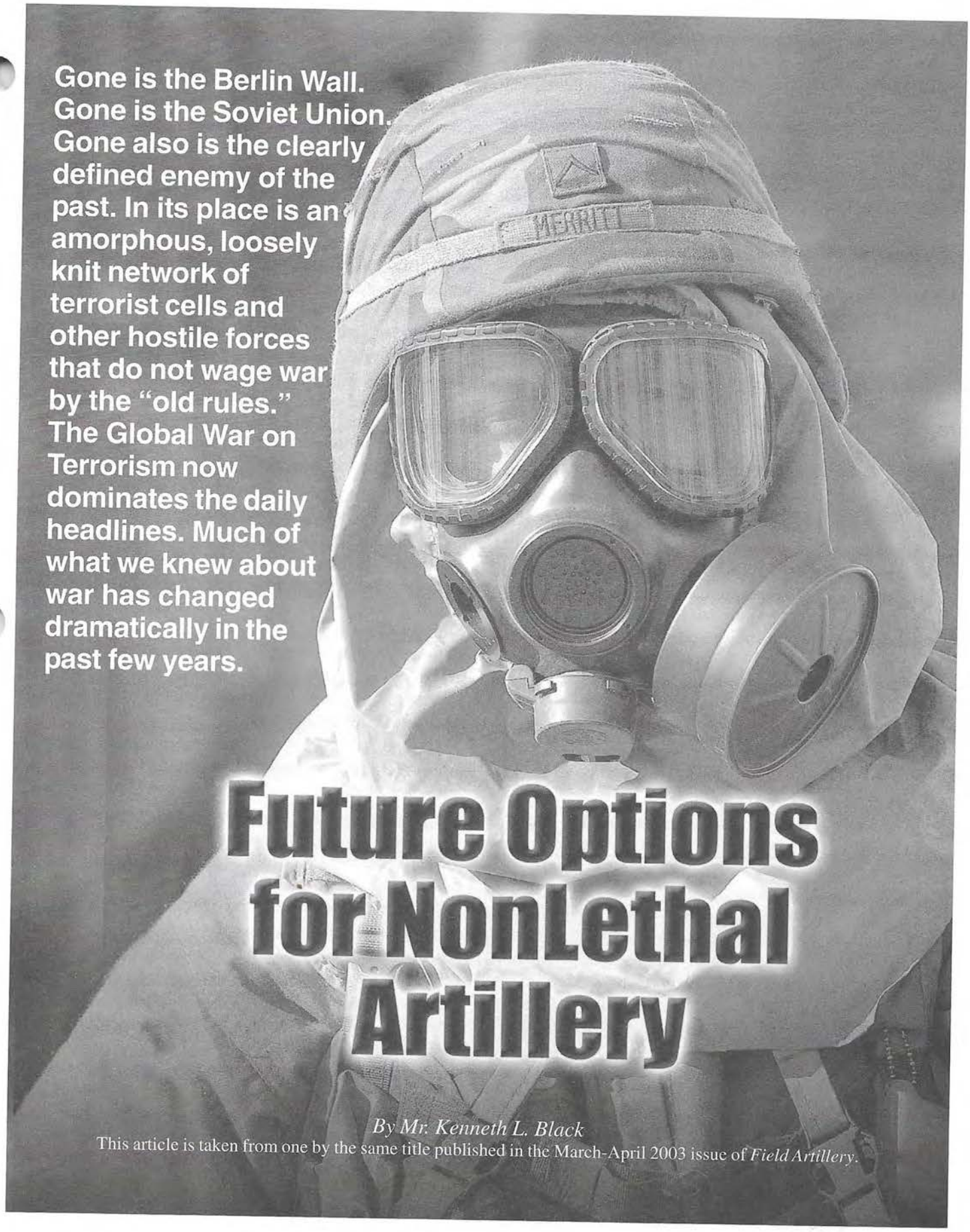


*Captured vehicle*

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*Ms. Chico is the lead project engineer for the M1 PVAB at TACOM–ARDEC. She led the integrated product team to the materiel release of the system. She has an associate in engineering technology and is acquisition-certified in system engineering.*




Gone is the Berlin Wall. Gone is the Soviet Union. Gone also is the clearly defined enemy of the past. In its place is an amorphous, loosely knit network of terrorist cells and other hostile forces that do not wage war by the "old rules." The Global War on Terrorism now dominates the daily headlines. Much of what we knew about war has changed dramatically in the past few years.

# Future Options for NonLethal Artillery

*By Mr. Kenneth L. Black*

This article is taken from one by the same title published in the March-April 2003 issue of *Field Artillery*.

Americans have grown more intolerant of war casualties. The public expects more sterile battles as precise weaponry demonstrates ever-increasing capabilities. Meanwhile, network television beams real-time war footage worldwide, allowing global audiences to scrutinize battlefield activities.

While Americans and our allies place a high value on life, many of our enemies do not. This growing ethical divide has given the enemy a new tool to use. For example, the Iraqi regime would not hesitate to put antiaircraft weapons or radar systems in a school yard or next to a hospital.

The enemy knows we are reluctant to bomb these installations because of the potential for the loss of innocent lives. The result could be a propaganda dividend for the enemy, rallying anti-American sentiment abroad and criticism at home. This is called the "CNN Effect."

Such circumstances have created a growing need for nonlethal (NL) alternatives. We can not only save the lives of both combatants and noncombatants but also reduce the collateral damage to structures and the environment.

The use of NL weaponry is not new, but the level of interest has grown dramatically in recent years. The term "NL artillery" might seem like an oxymoron to some, but as a concept, it must be pursued if the Field Artillery is to maintain relevance in all aspects of the future spectrum of combat. In fact, the Field Artillery has been firing NL smoke and illumination for many years.

"Less lethal" and "scalable effects" are terms often used interchangeably with NL. While the intent of NL technologies is to *avoid* lethality, unintentional casualties could result from such things as falling debris or the loss of electrical power in a hospital.

This article reviews a few alternatives that could be considered for artillery delivery. It is not intended to be comprehensive in its description of all possible technologies.

Many excellent reviews of this nature have already been published. One such study is "An Assessment of Nonlethal Weapons Science and Technology" (2002) by the Naval Studies Board of the National Research Council. (The reader can access the study online at the National Academies Press at *http://www.nap.edu.books/0309082889/html/.*)

Between the concept and reality of artillery-delivered NL munitions lie many implementation challenges and questions we must address.

The first set is political. We need a paradigm shift to address the mental inertia that defines artillery only in terms of high explosives. We must consider the Chemical Weapons Convention and other treaty limitations. Technology substance must be separated from hype with funding provided to develop the weapons. We also need to consider the implications of proliferation.

Next we need to address design challenges. Can we apply the technology both reliably and predictably? Can we deliver it with sufficient accuracy? How do we disperse the payload and control the distribution or concentration levels of the material? Are volume limits too restrictive, and can the technology be weaponized and survive the launch environments?

Finally we must consider operational issues. How useful and long lasting are the effects? Do they create a problem for friendly forces? What are the countermeasures? Will the terrain, wind, or other weather conditions significantly affect the technology? What are the effects of aging and environmental exposure? Are training and logistics requirements reasonable? Do the benefits justify the artillery's not firing lethal rounds—justify storing NL rounds in place of lethal rounds on board? Are there more effective ways of achieving the same results? Is it safe for the user?

All these questions must be answered as potential NL technologies are considered. Here are several with potential for delivery by artillery.

**Carbon Fibers.** Electrically conductive carbon fibers have disabled power grids in Serbia and Iraq. Thousands of thin filaments are dispensed over electrical facilities, such as substations, transmission lines, or generating stations. Floating down like a cloud, they short the electrical circuits and disrupt the enemy's ability to access power. Depending on the target, damage can be slight or extensive, localized or widespread.

Adversaries might implement countermeasures, such as covering substations or switching off circuit breakers, but doing so might invite a more destructive response.

The delivery of the carbon fibers might be accomplished by low-altitude, precisely timed, rapid expulsion. Perhaps more likely would be to extract the payload at a higher altitude, then guide it to a precise location and altitude before dispensing the fibers.

Current bomb versions of carbon fiber weapons reportedly are costly, which might hinder the development of this technology. Implementing an artillery shell with carbon fibers may be challenging, but the shell could provide a useful tool on the battlefield where power systems are a factor.

**Thermobarics.** As the name implies, heat and pressure are important characteristics of thermobaric weapons. Rapid pressure spikes are characteristic of conventional explosives. By comparison, thermobarics have a much longer pulse of high temperature and pressure. This makes them much more effective against convoluted targets, such as caves and complex buildings.

Fuel-air explosives (FAE) and nano-particle explosives share some commonality with thermobarics. A small explosive or dispenser initially distributes the energetic material. An automatic (oxygen-induced) or triggered initiation of the material follows that creates the tremendous pressure and heat.

Whether or not and how thermobarics could be used in an NL scenario is a topic of consideration. The difference between lethal and NL pressures and temperatures may be small and could require both triggering and operational solutions to provide reliable NL effects. The potential for scalable output where the destructive force could be field-adjustable makes this technology worthy of consideration as a less lethal option.

Thermobaric weapons have been used in several armed conflicts. Reasonable countermeasures are virtually nonexistent. Further research probably is warranted to determine the value of a potential scalable-lethality artillery shell.

**Engine Disruption.** Short- or long-term engine disruption can be an effective NL tool. One way is to block the air filter. An aerosolized solution of polyvinyl alcohol/borate will combine with carbon dioxide to create a sticky polymer that readily adheres to the air filter upon ingestion. With a sufficient quantity ingested, the engine ceases to function as it is starved of air.

The materials are inexpensive and nontoxic, but targeting accuracy is important.

By replacing the air filter, engine operations can resume. Clogging a radiator would be more difficult to remedy. If the air filter is breached, the engine's inhalation of the material will result in severe gumming and its incapacitation.

Various reactive species of materials might disable an engine effectively. Designing the materials for a particular application and delivering the materials to the right place, then dispensing them at the right time, are all issues to be addressed.

Immediate engine shutdown might be the only countermeasure and then only if initiated before any active material reached the engine.

**Malodorants.** These are safe chemical compounds that, due to their characteristic smell, are highly repulsive to personnel. Because the effect is primarily psychological, the response to the stimulus cannot be predicted with accuracy. Temporary in nature, malodorants have little collateral effects.

Liquid malodorants could be dispersed directly from a passing artillery shell. Alternatively, the payload could be ejected from the shell, aerosolized, and then dispersed at a prime altitude above the target area.

Another malodorant approach involves using "paint balls" or "Calgon" beads that are ejected at a predetermined altitude and rupture upon impact. A microencapsulated version could survive ground impact and remain poised for passing enemy troops to rupture.

Further, malodorants could be combined with another material, such as an irritant, to create a more effective tool.

Studies have shown cultural and ethnic variability in the degree to which any particular malodorant is objectionable. Further study might be required to find a substance that is universally repulsive. Some success has been found by creating a cocktail of biological odors, such as human waste and vomit.

The quantity of material carried in a shell is obviously limited. Weaponization might be required, although many applications relevant to artillery exist due to the developments of an aerosolizing dispersion generator and a frangible mortar round. ("Frangible" means the shell breaks up into small, lightweight pieces before or during impact.)

A malodorant artillery application warrants further consideration. Because some development work on malodorants already has been completed, costs to deploy this technology could be less than many other options, and it could be implemented more quickly.

**Irritants.** These are natural or synthesized chemicals that irritate the respiratory tract, eyes, or skin. They can cause burning and watering of the eyes, making it temporarily difficult or impossible to see. Other possible effects include coughing, choking, and skin itching and burning.



*Potential NL 155-millimeter artillery shell with malodorant beads*

One common irritant is tear gas. Another is *oleoresin capsicum* (OC) derived from chili peppers. Many others are available, and some are in use. They can be dispensed as powders, liquids, or fogs.

Most people quickly seek relief from irritants' effects. Less predictable is the response from highly trained and disciplined troops.

Irritants could be dispensed in microencapsulant form, sitting idly until activated by passing troops. Their effectiveness might be further enhanced in combination with another technology, such as malodorants.

Although irritants have the potential to be quite effective, treaty concerns and predictability of response could affect the development of this option.

**Combustion Inhibition.** This is a technology to use against air-breathing motorized vehicles. A chemical agent is introduced into the combustion chamber air intake that interferes with proper combustion of the fuel and stops the engine.

Ferrocene seems to be one of the more promising compounds. A common antiknock compound in gasoline, it has low toxicity and is effective in very low concentrations.

The chemical could be released by aerosol dispersion, by ruptured encapsulants, or in conjunction with another technology, such as airborne microencapsulants.

The engine stoppage is temporary. Once the ambient air and the internal engine air clears, the engine can be restarted.

High winds and rapidly moving vehicles obviously would present a greater challenge. However, if the enemy halted his vehicles briefly at a strategic location, combustion inhibitors could provide a useful advantage. Once the vehicles are halted, friendly forces could fire a continuing barrage of rounds to further inhibit the mobility of the vehicles.

Combustion inhibition could be a useful tool in a commander's arsenal.

**Obscurants.** As a class, obscurants deny or impair the vision of people or equipment. Smoke generators have been in use for many years, obscuring friendly forces from view and impairing the adversary's viewing capability.

Aerosol fog or particulate obscurants are most common. With advancing technology, more capable obscurants are required.

No single obscurant is effective against all sensors and optics. Fog oil and other smokes are effective in the visual spectrum. Brass and carbon-based particulates are effective in the infrared (IR) spectrum, but they are toxic, causing respiratory irritation and environmental concerns. Tailored hybrids are being researched that could be effective against both IR and millimeter wave (MMW) technologies. A different type of obscurant designed to coat and harden on the surface of exposed optics and viewing ports could be effective but more challenging to deliver. Further development of obscurants may be warranted.

Properly selected and deployed, obscurants are difficult to counter.

**Flash-Bang and Light Devices.** These interfere with viewing. A flash-bang device typically combines a very loud report with a blinding flash. The combination results in temporary surprise, vision loss, confusion and disorientation without long-term effects. Studies also have shown that intense stroboscopic light will induce nausea and disorientation.

Still other device variations can generate a broadband output of light at high intensity. This explosive device would serve a defensive role and be capable of disabling night-vision optics, heat-seeking sensors, and other low-level heat or light equipment.

Flash-bang grenades and similar devices are a mature technology currently in use. The major limitation seems to be the short time of their effectiveness.

Stroboscopic technology is well established, but packaging and delivery are not. These devices probably would need to remain airborne to be effective for an extended period of time. Developing the proper approach and hardware to accomplish this will require some effort.

One concern applicable to all these devices, but probably more so to the broadband light, is the risk to friendly forces. Friendly personnel and light-sensitive equipment could be affected if these tools are not carefully and thoughtfully employed. However, the extended range of artillery systems could negate this issue.

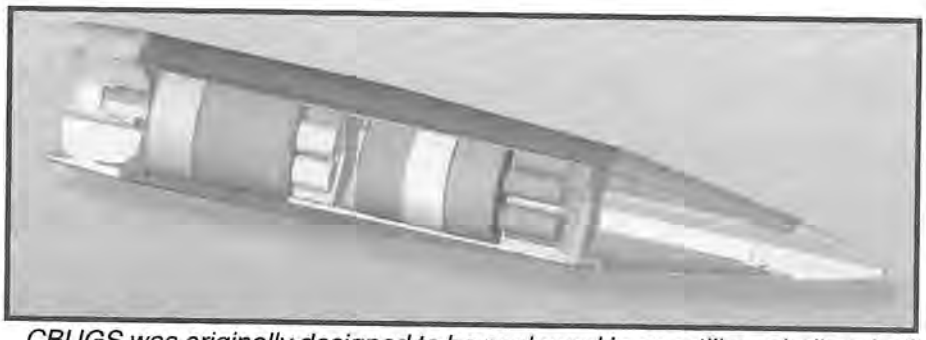
Flash-bang devices seem to be limited to harassment and demoralization of an enemy. A stroboscopic device would be more effective in disrupting operations for a useful period of time, while high-intensity broadband devices could be very effective against optics.

**Ground Sensors.** These are situated in a relatively fixed location, autonomously collecting and relaying or storing data. Collected data could either be telemetered or archived for later interrogation. Because sensors are passive in nature, they have no direct effect on an adversary.

These devices could sense chemical, biological, or radiological materials. They could measure vibration or sound, detect motion, or monitor an area with a microphone or video camera. The possibilities are many, depending on the need.

One example is the compact biological unattended ground sensor (CBUGS) that originally was designed to be packaged in an artillery shell. The device monitors the

air for the presence of biotoxins. Airborne species are collected and analyzed using laser-induced fluorescence. Having this kind of information available would increase troop safety and allow for a more informed, potentially less lethal response to an adversary.



*CBUGS was originally designed to be packaged in an artillery shell and will detect biotoxins.*

Sensors could monitor their surroundings for weeks or months, storing or transmitting the data. Without camouflage, they might be spotted and disabled by the enemy. The technology has been demonstrated, but further weaponization is needed.

**"Smart Dust."** The miniaturization of hardware and growth of microelectromechanical systems (MEMS) technology has led to the development of smart dust and other tiny sensors (see figure below). Small enough to be blown in the wind, such a sensor can monitor temperature, motion, humidity and other parameters. Each sensor is self-sufficient with its own power supply and electronics and communications hardware.

Currently several cubic millimeters in volume, these sensors soon will be the size of a grain of sand. Dozens, hundreds, or thousands could be deployed to create a massive network of sensors that would be queried by an interrogator.

Smart dust could act as "sentries" to provide advanced warning of enemy activities, protecting friendly forces and allowing them to deny the enemy specific terrain. It also might provide battle damage assessment (BDA).




Among the challenges is the development of low-powered, robust communications and energy storage or generation that could operate sensors for months or years. Properly designed, some sensors might be able to stay aloft for hours. Artillery application would require packaging, dispersion, and a method for interrogating the sensors.

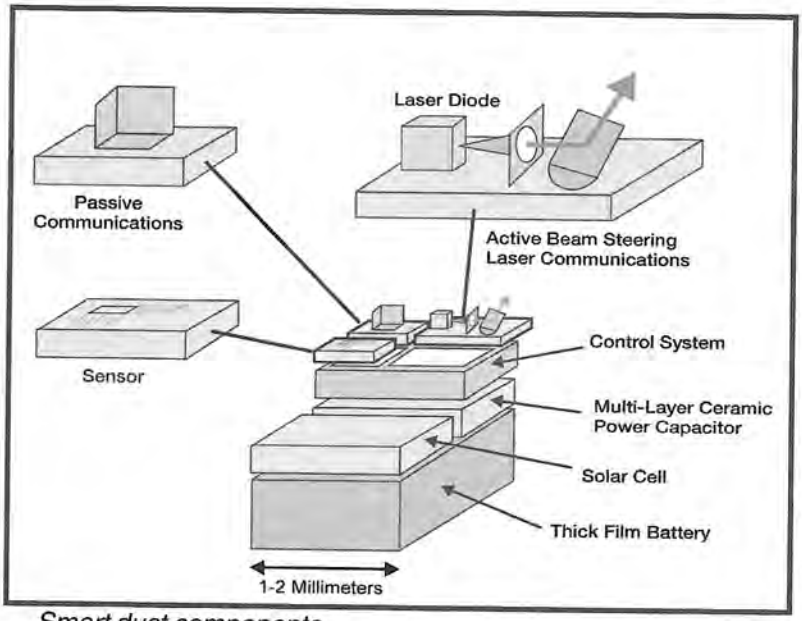
This evolving technology is being explored by many organizations. The suite of sensors available is likely to expand greatly over the next several years. Though many will be larger than a cubic millimeter, they should be small enough to provide discreet monitoring in the air or on the ground. Smart dust could have a reat future as a military tool.

**Taggants.** These mark or identify personnel or equipment for subsequent monitoring or identification. Various paints and dyes, both visible and invisible, can be applied either overtly or covertly. Some are designed to be fluorescent under ultraviolet or other types of light. Taggants may provide the opportunity for a less lethal response in certain conditions.

The type of taggant that is more likely to be artillery-delivered is the electronic tag. These small devices could be active or passive, providing information to the observer about motion or location. Active tags would have batteries and initiate data transmission, while passive tags must be interrogated to provide information. Transmission distances in these devices are currently quite limited.

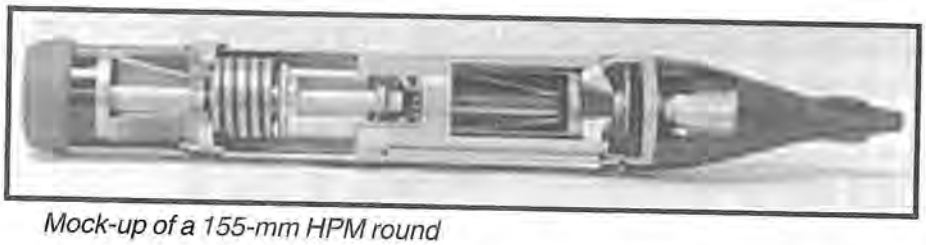
As a corollary to the smart dust sensor technology, the taggants could be so small and inconspicuous that they might be readily deployed without detection.

**High-Power Microwave (HPM).** These devices are in the directed-energy class. A brief,




*Smart dust components*

high-powered pulse induces a high-voltage spike in the electronic circuit of the targeted system.



*Mock-up of a 155-mm HPM round*

The ability of the microwave energy to damage the intended circuitry is affected by factors such as the surrounding structure, the physical design of the target, design of the circuitry and duration of exposure. The voltage spike can result in electronics that are confused, damaged, or destroyed, thus degrading or terminating the device's ability to operate.

The high microwave frequency (typically between 300 MHz and 300 GHz) is more effective at coupling with the circuits than are lower frequency emissions. Especially vulnerable to HPMs are those systems with an antenna, providing a ready conduit for microwave energy to enter the system.

Countermeasures to HPM are difficult and expensive.

As with many technologies, HPM is size-limited in an artillery application. This in turn will limit the power available and radius of influence. The use of HPMs seems feasible but challenging due to size constraints and flight environments.

A properly designed, built, and delivered weapon could be very effective in limiting the warfighting capabilities of an enemy without unnecessary loss of life or collateral damage. With the growing dependence on electronic circuitry on the battlefield, HPM weaponry looks very appealing.

**Foams.** Several types of foams have NL applications. Hardening foams can be used to deny or limit access to vehicles, equipment, or buildings. Neutralizing foams are able to decontaminate and neutralize biotoxins and chemical agents.

Sticky foams are useful for crowd control, access denial, and mobility restriction. This incredibly aggressive foam sticks so well that it can quickly incapacitate an individual. Sprayed on a door handle, the person would get stuck trying to open the door.

While possessed of intriguing potential, the utility of foams in artillery applications is questionable. The foam's volume is limited by the projectile size. Coupled with requirements for precise delivery followed by precise application, foams of any type don't appear to be good candidates for artillery applications.

**Other Technologies.** Dozens of other technologies that are potentially nonlethal in nature probably are not well suited for artillery consideration. For example, super lubricants that are slippery agents and antitraction compounds are not suitable for artillery delivery. The challenges include volume limits, precision targeting, material dispensing, and the general weaponization of lubricants into an artillery projectile.

Other technologies also are not practical for artillery delivery or pose legal or ethical issues that may prevent their coming to fruition in the United States. These include super caustics and super acids that attack metal, rubber, glass, concrete, or asphalt. Gel agents could cause fuel to gel. Contaminants could destroy the lubricating characteristics of engine oil. Superglue bombs combined with fibers could effectively seal doors to vehicles. Depolymerizers would attack plastic and rubber materials, such as tires. Embrittling agents could severely weaken metal structures.

By class, there are several technologies whose effects are not understood completely and/or are unpredictable with the potential to cause unintended casualties.

*Acoustics.* Audible or subaudible acoustics can have significant effects on individuals. Already in use are playing loud, irritating music or shrill tones for long periods of time.

The indiscriminate effects of this approach could be eliminated by a recent development, called a "sonic bullet." Precise targeting of the acoustic device allows high-intensity sound to be delivered at a distance while being inaudible to people standing nearby.

Another option, infrasound, that has frequencies below 20 Hz, cannot be detected by the human ear. But infrasound can resonate in human organs and cause pain and other serious effects.

The effects of acoustic devices are unpredictable and not completely understood. In addition, the delivery mechanism must include high-powered, large speakers or very precise targeting.

*Entanglements.* These are designed to mechanically constrain or terminate the mobility of vehicles or equipment. Typically involving some form of a net or wire, the deployed entanglement engages rotating or moving parts, such as wheels, drive shafts, radiator fans, and tank treads that are difficult to remove.

Steel can entangle effectively but is heavy, bulky, and unwieldy. Better options include high-strength synthetic fibers with strength-to-weight ratios nearly 10 times that of steel.

Attaching metal cubes or wedges could jam tank treads or wheels. Sharpened metal "caltrop" stars caught by rotating engine parts could cut coolant lines and drive belts or perforate radiators.

One option for engaging a passing vehicle could be small barbed caltrops that embed themselves in tires and interfere with the vehicle's operations. Another possibility might be preemplaced, target-activated dispensers. Camouflaging and precision targeting probably would be required.

Packaging and deployment challenges, along with volume limits, make this option difficult to pursue. The affected area would have to be rather small, and countermeasures or subsequent counterdeployment by the enemy are possible.



*This shows the aftermath of the Moscow theater siege where a calmative was used.*

*Thermites.* These are highly exothermic powdered pyrophoric materials that give off heat during a chemical reaction. Composed of fuel and oxidizer components, reacting materials can reach nearly 3,000 degrees Celsius. Thermites can be designed to ignite under conditions of heat, shock, or pressure. The energy liberated in the reaction is similar to high explosives but occurs at a much slower rate.

With an adequate delivery method, thermites could incapacitate vehicles and equipment. Relatively small amounts could burn through aircraft surfaces or vehicle air cleaners with the resultant slag causing the engine to seize. A larger quantity could burn a tire, melt a hole in an intake manifold, or burrow holes into a power transformer. Personnel injury and fire are potential unintended side effects.

*Calmatives.* A class of NL technology that has been banned by the Department of Defense is calmatives. These are chemicals that to some degree have a calming effect on individuals. These effects range from mild relaxation to substantial lethargy to comatose incapacitation. Although the technology is mature and the mechanisms are well understood, the upper bounds of the effects approaching lethality are often unclear. Administration of the appropriate dosage is a challenge. Calmatives often have less than a tenfold difference between effective and lethal dosages.

The application of a calmative during the October 2002 siege of a theater in Moscow illustrates the problem. Russian Special Forces pumped a calmative gas into the theater held by terrorists in hopes of incapacitating the terrorists and, by coexposure, their hostages. Due to an overdose or an excessively toxic mixture, more than 100 of the 850 hostages died from the effects of the gas.

**Conclusion.** As the battlefield grows increasingly complex, so will demands for NL options. Artillery must be included in this evolutionary process. Thermobaric, high-power microwave, smart dust, and malodorants all seem worthy of near-term pursuit. Consideration also might be given to antioptics (obscurants and light), engine technologies, irritants, carbon fibers, and other sensors. With more detailed scrutiny and as technology and the political landscape evolve, these technologies may become more viable candidates.

In the contemporary operational environment, NL artillery is relevant. Such capabilities will prove useful tools in the arsenal of future ground force commanders.

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*Mr. Black is an engineer in the Exploratory Systems Technologies Department at Sandia National Laboratories, Livermore, California. He is the lead engineer for the "Technology Options for Nonlethal Artillery," a study that is funded by the Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, New Jersey. Also in the Exploratory Systems Technologies Department, he is involved in defense- and energy-related feasibility studies, as well as global climate change research using high-altitude manned and unmanned aircraft. During most of the previous decade, he served as the lead propulsion system engineer for the Operation and Deployment Experiments Simulator (ODES) Post-Boost Vehicle, an experimental payload deployment bus flown on the Strategic Defense Initiative (SDI)-related Strategic Target System Missile (STARS II). Prior to that, he was a project engineer for strategic defense payloads, fusion energy research, and nuclear weapons.*

# Engineering the Nonlethal Artillery Projectile

*By Mr. Stephen G. Floroff*

This article is taken from one by the same title published in the March-April 2003 issue of *Field Artillery*.

*As Field Artillery evolves to meet the challenges of future wars against terrorism, the tactical concept of nonlethal (NL) fires will undoubtedly gain increasing emphasis. By generating NL protective and suppressive fires as well as special-purpose fires (incapacitants, countermobility and thermobaric effects), the FA will be poised to participate in all aspects of the future spectrum of conflict.*

For the first time, the potential exists for both general support (GS) and direct support (DS) artillery units to engage in noncombat scenarios, providing large standoff, NL indirect fires in support of maneuver forces. NL payloads are being contemplated to control crowds, disable vehicle mobility, provide networked detection and sensing, as well as disrupt radar and communications and electrical power. To achieve these goals, we must rethink the entire munitions delivery concept, emphasizing nondestructive payload delivery mechanisms.

Department of Defense Directive 3000.3, *Policy for Nonlethal Weapons,* defines them as those that "are explicitly designed and primarily employed so as to incapacitate personnel or material, while *minimizing* fatalities, permanent injury to personnel, and undesired damage to property and the environment" [emphasis added].

These seemingly disparate requirements pose unique engineering challenges for the munitions community that, up until now, has concentrated on maximizing destructive terminal effects. The goal now becomes to create an NL carrier or payload delivery mechanism to minimize, as opposed to maximize, collateral damage within a defined target area. The unique challenges associated with achieving this goal form the basis of this article.

Within the NL community, it is generally accepted that any impact exceeding 58 foot-pounds of kinetic energy will result in a potential fatality. To put this metric into real-world perspective, 58 foot-pounds equates to roughly one-half the impact one would feel being hit by a baseball thrown by a professional pitcher.

How can this metric realistically be evaluated in an indirect-fire scenario? One simple and comparatively inexpensive approach is to employ a mortar as a "first cut" tool to evaluate potential NL collateral damage terminal effects.

In September 2000, engineers at the Tank-Automotive and Armaments Command–Armaments Research, Development and Engineering Center (TACOM–ARDEC), Picatinny Arsenal, New Jersey, initiated a program to develop an NL 81-millimeter mortar munition or "cartridge" using nontraditional materials. The purpose was to develop a cartridge that impacts with NL kinetic energy as described. (See Figure 1 for the cartridge design goals and the technical challenges associated with them.)

Many conceptual approaches to reduce the kinetic-energy impact of the mortar cartridge are being investigated. Because kinetic energy is mass- and velocity-dependent, minimizing these constituents, either independently or together, will produce the best technical approach for continued development. This process is shown in Figure 2.

Current considerations include the introduction of "nontraditional" cartridge materials, such as frangible and organic composites, as well as a completely combustible cartridge case that burns up after dispensing an NL payload over the target area. ("Frangible" means the shell casing will break into small, lightweight pieces before or upon impact.)

**Design Goals**

- Minimize mechanical and deployment complexity.
- Minimize negative impact to payload volume.
- Require no special handling, storage, or training.
- Be scalable to artillery projectile and missile applications.

**Technical Challenges**

- Survive typical muzzle-launch environments.
- Have appropriate fuzing for optimum payload dispersal and effect.
- Require accurate meteorological data at the target location—
  - -To compute payload dispersal and effect.
  - -To ensure kinetic-energy criteria is met.

*Figure 1: Design goals and technical challenges associated with developing an NL mortar cartridge*

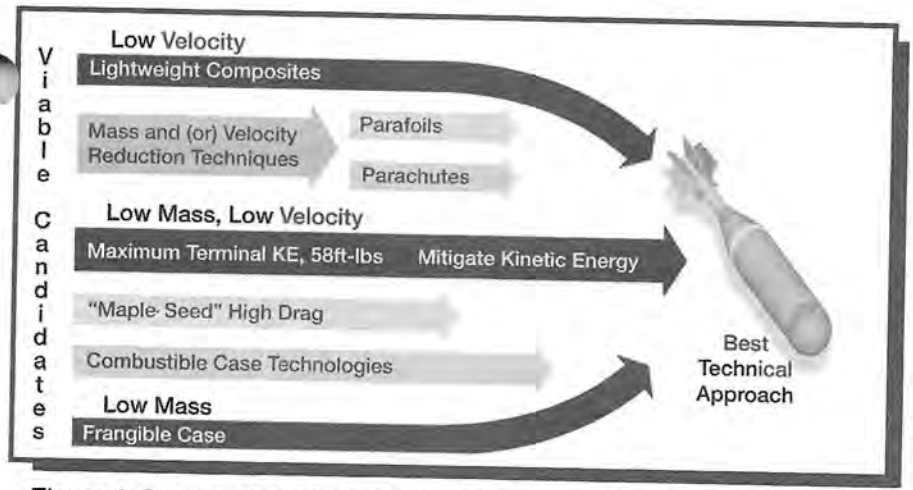



*Figure 2: Process to reduce the kinetic energy of an NL mortar cartridge*

More radical approaches to reducing kinetic energy impact include deployable rotors to induce a "winged maple seed" effect (Figure 3) and the more traditional parachute (Figure 4) to reduce impact velocity. Both of these concepts have advantages and disadvantages and both will be screened against "exit criteria" to rank their relative effectiveness. ( Figure 5.)

While the mortar presents a cost-effective method to evaluate methodolgies for delivering NL indirect-fire payloads, the technology associated with kinetic energy mitigation is directly applicable to NL payloads for cannons or missiles. One possible approach to a cannon-launched NL artillery shell is shown in Figure 6, page 60.

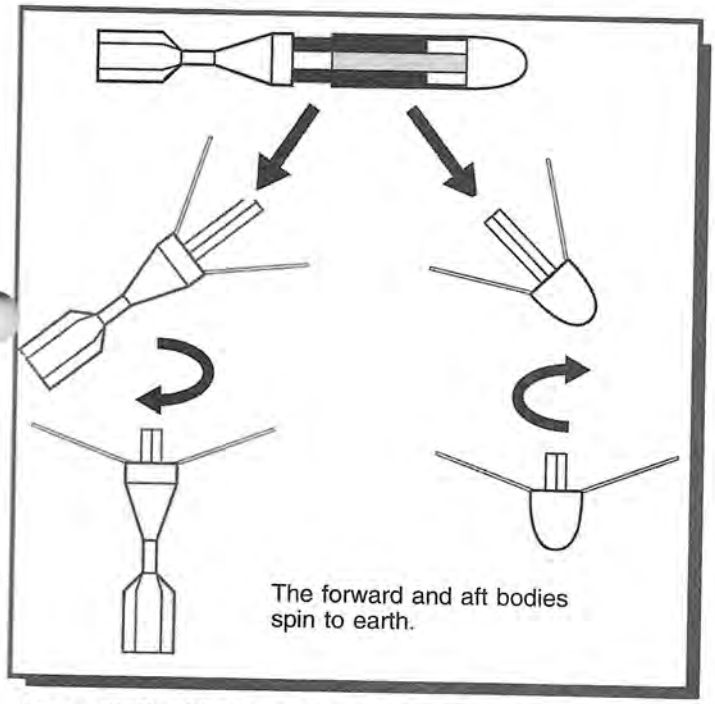



*Figure 3: Double-vane decelerator. To reduce kinetic energy, the mortar cartridge could deploy rotors to induce the winged maple seed effect.*

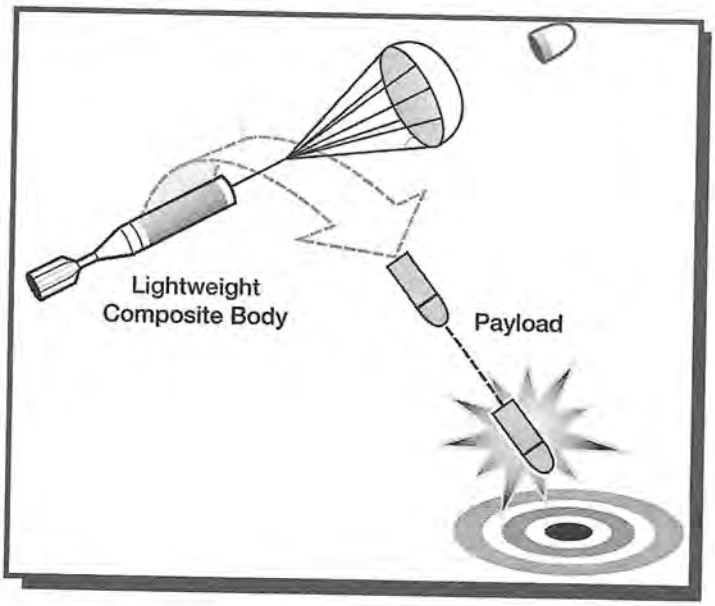



*Figure 4: Single-parachute forward-ejection cartridge. This is a more traditional approach to reducing the impact velocity of a cartridge. This cartridge would have a fuse in the rear.*

| Criterion | Threshold | Objective |
|---|---|---|
| 1. Survive muzzle launch environment | Successful launch from 200 to 2,500 meters | 150 to 4,000 meters |
| 2. Projectile accuracy using lightweight NL casing | Delivery accuracy to 1 probable error (PE) <15 meters to 1,500 meters | <1 percent of impact range beyond 1,500 meters |
| 3. Fusing concept for optimum payload dispersal and effect | Successful NL delivery and dispense of generic payloads over the area | |
| 4. Maximum terminal kinetic energy | 58 foot-pounds | |
| 5. Scalable technology | | 25 foot-pounds |

*Figure 5: Exit criteria for the Nonlethal Mortar Cartridge Development Program*

Using a conventional 155-millimeter improved conventional munition (ICM) round as a carrier, no additional or specialized crew training would be required to load and fire it. Once the round was over a target area, it could eject two cartridges containing various NL payloads. Conceptually, the cartridges could contain malodorant pellets for crowd control and/or thermobaric or high-power microwave payloads for more specialized mission scenarios.

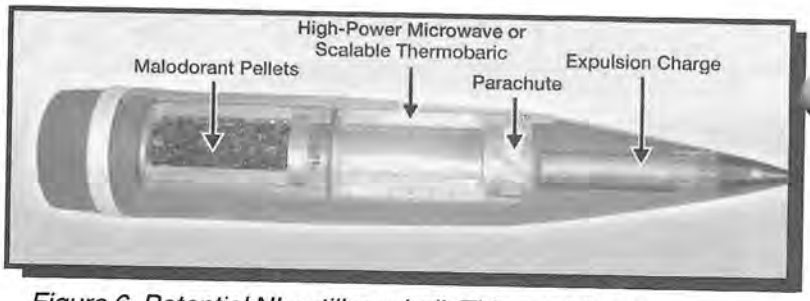



*Figure 6. Potential NL artillery shell. This would be a 155-millimeter ICM, requiring no additional crew training to load or fire the round.*

NL indirect-fire munitions present a unique opportunity for the FA to move into more nontraditional fire missions. The engineering associated with creating and employing these munitions in an indirect-fire role is still in its infancy; however, we understand and are working the technical challenges. We are building and testing prototypes.

What remains is to create and maintain a dialog within the FA community as to the potential and relevance for NL indirect "fires" in the future spectrum of conflict.

*Thanks to the following for their input: Matthew P. Evangelisti, Project Engineer, and Robert D. Worth, Consultant, on the TACOM–ARDEC 81-millimeter Nonlethal Mortar Program, Picatinny Arsenal, New Jersey, and Susan I. Walker, Science and Technology Advisor in the Depth and Simultaneous Attack Battle Lab, Fort Sill, Oklahoma.*

*Mr. Floroff is a senior artillery engineer employed at TACOM–ARDEC at Picatinny Arsenal. During his 24-year federal career, he has been involved exclusively in research and development activities associated with future artillery development. He has been responsible for many artillery weapon prototypes demonstrating robotic ammunition handling, novel recoil attenuation techniques, towed artillery digitization, lightweight howitzer design and, most recently, NL indirect-fire initiatives. He has published many technical reports on artillery-related research and development topics and has spoken at national and international weapons and munitions symposia. He holds a bachelor's in mechanical engineering from the New Jersey Institute of Technology.*

## Submitting an Article to *MILITARY POLICE*

Articles may range from 2,000 to 4,000 words. Send a paper copy along with a disc in Microsoft® Word to *MILITARY POLICE*, 320 MANSCEN Loop, Suite 210, Fort Leonard Word, Missouri 65473-8929 or e-mail to *pbd@wood.army.mil*. In the subject line type "MILITARY POLICE."

Any article containing information or quotations not referenced in the text should carry appropriate endnotes.

Contributors are encouraged to include black-and-white or color photographs, artwork, and/or line diagrams that illustrate information in the article. Include captions for any photographs submitted. If possible, include photographs of soldiers performing their missions. Hard-copy photographs are preferred, but we will accept digital images in TIF or JPG format originally saved at a resolution no lower than 200 ppi. Please do not include them in the text. If you use PowerPoint® for charts or graphics, save each illustration as a separate file and avoid excessive use of color and shading in graphics and slides. Please do not send photographs embedded in PowerPoint or Microsoft Word documents—send in original photograph format.

Articles should generally come from contributors with firsthand experience of the subject being presented. Articles should be concise, straightforward, and in the active voice.

Include your full name, rank, current unit, and job title. Also include a list of your past assignments, experience, and education; your mailing address; and a fax number and commercial daytime phone number.

**Include a statement with your article stating that your local security office has determined that the information contained in the article is unclassified, nonsensitive, and releasable to the public.** We do not require a hard copy of the clearance.

All submissions are subject to editing.

# United States Disciplinary Barracks—*On the Move*

*By Major Pamela Sue Ting and Major Rodney S. Morris*

*The rhythmic clink, clank, clink of full restraints echoed off the barren walls of the now empty Special Housing Unit (SHU)* as the last inmate left his cell and shuffled through the hall to an awaiting prison bus. Secured in leg irons, hand irons, belly chain, and black box lock, he was the last inmate to leave the 127-year-old United States Disciplinary Barracks (USDB), Fort Leavenworth, Kansas. He didn't say a word.*



*Front view of the new United States Disciplinary Barracks, Fort Leavenworth, Kansas*

A couple of years back, the thought of moving the USDB seemed to be a task as monumental as the ominous, brown stone walls surrounding it. It would be the first move in its history. The plan had to be solid, rehearsed in detail, and executed as perfectly as humanly possible. Failure would mean risking yourself, your buddy, the local communities, and possibly your unit. Failure at any portion of the mission was not an option.

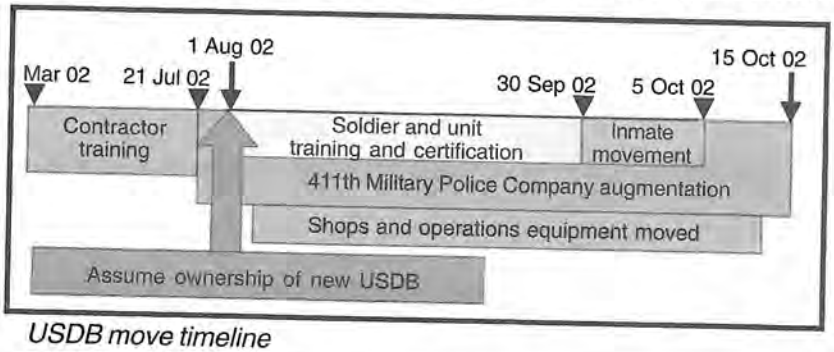
This article details the successful August to October 2002 operation that moved the USDB into its new facility. We dedicate it to the soldiers and civilians of the USDB and the 705th Military Police Battalion, Fort Leavenworth, which was augmented by the 411th Military Police Company; 720th Military Police Battalion, Fort Hood, Texas; and the Fort Leavenworth Garrison. Together, they dauntlessly transformed vision into reality without incident.

### Old to New

The USDB is the only maximum-security prison in the Department of Defense. At one time, it housed almost 1,500 inmates. The new facility, with a price tag of $67.8 million, offers state-of-the-art security systems and improved cell and workspace designs that bring the facility in line with American Correctional Association standards. However, it was only funded to house a maximum of 515 inmates. Over a period of several years, the USDB reduced its population to meet this capacity by transferring some inmates to regional confinement facilities and others to federal penitentiaries. At the time of the move, there were 419 inmates, including six death sentence inmates, to transfer to the new facility.

### Move Planning

The timeline below depicts the overall plan to train up and transfer to the new facility. The training and certification had to be conducted while simultaneously operating the USDB. The USDB conducted split operations, on a limited basis, beginning on 1 August 2002 (when the "keys" to the new facility arrived), and then in



*USDB move timeline*

**The SHU houses death sentence inmates and other maximum-custody inmates, such as those with disciplinary problems, as well as protective-custody inmates. Inmates requiring special quarters for health reasons are also housed in the SHU.*

synchronization during the move as each old wing was closed and each new housing unit was populated.

This was why the augmentation from the 411th was so crucial and deeply appreciated. Its soldiers worked in the vocational shops and held several key positions on every shift. This augmentation allowed each of the three guard force companies to be relieved from its shift, one company at a time, to train and rehearse. This support also freed personnel working in the vocational and operations shops so that they could train with one of the companies.

## Phases of Movement

Once the mission analysis, planning, and training were conducted, the 705th refined its inmate movement plan. Each company had rehearsed inmate movement during the previous quarterly training and immediately before execution. The battalion divided the mission among each guard force company, the 411th, and the battalion Correctional Emergency Response Team (CERT). It was a four-phased operation, lasting from 29 September to 5 October 2002; the custody and control of both facilities still had to be maintained.

Each day during the first phase, Company A inspected, inventoried, packed, loaded, and unloaded 50 to 80 inmates' authorized property. Company A also strip-searched and inspected inmates, reinspected the few personal hygiene items they were allowed to take to the new housing unit, and then escorted inmates to their preassigned cells in 6 Base, the cellblock in the SHU that was unoccupied and served as a maximum-custody isolation area. The inmates would spend one night in 6 Base and then be transferred the next morning.

In the second phase, Company C strip-searched, inspected, and secured each inmate, according to his custody level, and escorted the inmates to the bus at the loading dock outside 3 Base. The 3 Base cellblock area was empty and had been used for platoon and company training. Its final use was as the most secure and efficient route to transfer inmates from their staging area in 6 Base to the prison bus. Additionally, Company C inspected and cleared 6 Base before more inmates were brought down. The U.S. Penitentiary at Leavenworth provided a modified prison bus, greatly enhancing security during inmate transfer. The USDB had enjoyed a professional, reciprocal relationship with the penitentiary since its construction by USDB military inmates in 1897.



*Company A soldiers and a USDB supply clerk unload a truck outside one of the housing units.*

In the third phase, the 411th cordoned off and secured Area of Operation (AO) Vigilance (as the approximately 10-square-kilometer area encompassing the old and new facilities is known) before any inmate shipment. The battalion's CERT members reconnoitered the route, provided security using lead and trail vehicles and a response force for any contingency. No one, not even the chain of command, moved when AO Vigilance was closed.

In the fourth phase, Company B received, searched, inspected, and escorted the inmates to their newly assigned cells in the housing units. Additionally, Company B provided orientation classes and tours to familiarize inmates with the new facility.

## Training

Several noncommissioned officers (NCOs) from each company were trained to use the security systems at the new facility. Then they prepared lesson plans, presentations, and hands-on practical exercises for the training and certification of soldiers and civilians. Units rotated by company through a two-week training and certification process that included the critical individual and collective tasks needed to operate the state-of-the-art facility and execute and fine-tune emergency action plans. Officers from the Combined Arms and Services Staff School greatly enhanced the training. On two occasions, they role-played compliant inmates to practice the movement security of over 400 personnel during the typical schedule of calls.

## D Minus One

The normal quiet of the old USDB rotunda on a Sunday afternoon gave way to inmates' resounding whistles, hoots, and hollers when 7 Wing, which housed all the minimum-custody inmates, was ordered to lock down. At 1300, forty-five Company A soldiers entered the facility and began the move. Up until this moment, the inmates were unaware of the actual date they were going to move. The NCO in charge broke his platoon into several packing teams, quickly moving boxes into place. Clipboards, ration sheets, and inventories were at the ready. This was the minimum-custody wing and these inmates had the most property.

Company C had already inspected and cleared the cells in 6 Base. The mood of the first group of twenty inmates escorted to the SHU appeared to be upbeat. All inmates would not be processed in time for their scheduled evening meal, so cooks from the 705th Headquarters and Headquarters Company adapted by serving prepacked meals. Packing then continued and by 1830, the boxes had been palletized and loaded on a truck and the last inmate for the day was moved. Company A soldiers then went to the new facility to unload and secure inmate property. At 2000, the day's mission and after-action report were complete.

## D Day

At 0500, the CERT conducted an accountability inspection and loaded ammunition. At 0530, Company C's escort teams assembled in 3 Base. Leaders briefed their personnel and inspected equipment and the 3 Base areas to ensure that it was clear. By 0600, the brigade emergency operations center and battalion Army logistics operations center (ALOC) were operational. By 0630, the CERT drew weapons and special equipment, performed preventive maintenance checks and services on vehicles, and conducted precombat inspections. Company C began the first ten strip searches in 6 Base, while Company A assembled upstairs, reviewed the day's manifest, and briefed personnel on changes.

At 0700, Company A began the next round of inspecting, inventorying, and packing inmate property in 6 Wing. Company C had completed inspections of inmates in 6 Base by 0800. The inmates were then escorted out of 6 Base, through the SHU, to 3 Base to be loaded onto the bus. The first busload of inmates was loaded and secured by 0930. On order, the 411th closed AO Vigilance, and the CERT reconnoitered the route. The CERT provided security as the bus—a virtual cell on wheels—departed through the old west gate, drove through AO Vigilance, and entered through the new west gate. Several CERT members, designated as a response force, were ready for any contingency. By 0945, Company B soldiers received the first inmates of the new USDB. The inmates were searched, inspected, and escorted to their newly assigned cells. Once all the inmates for the day arrived, Company B soldiers had the inmates inventory their property. Afterward, they gave the inmates orientation classes, a tour of the facility, and answered any of their questions. In the afternoon, Company A delivered boxes of inmates' property for the next day's move. Each day continued in the same manner until the mission was complete.



*Specialized prison bus prepares to leave the old West Gate with a load of prisoners for the new facility.*

## Conclusion

After the transfer of inmates, several system hiccups (that you could only find after several hundred people actually lived at the facility) challenged the engineer platoon but were resolved quickly. The dedication of the NCOs, specifically in the Directorate of Operations and the Directorate of Personnel Services, was impressive. They worked countless hours making sure the facility was ready. Without those soldiers, this move would not have happened as smoothly as it did. The USDB has some of the most professional military police men and women, as well as incredibly dedicated soldiers from twenty other military occupational specialties, serving anywhere in today's Army.

*Major Ting is the commander of Company A, 705th Military Police Battalion, and Major Morris is the USDB Brigade S3.*

### Facts About the New USDB

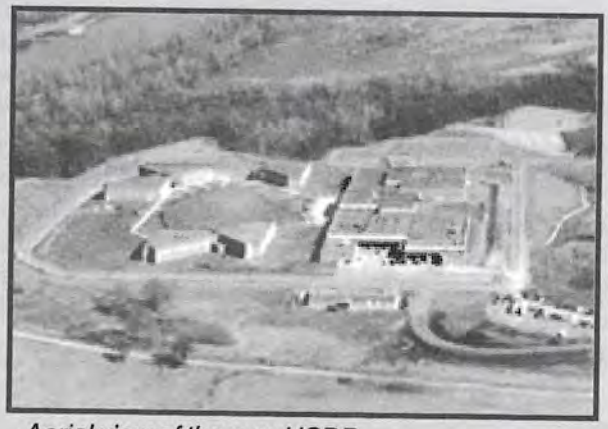
When you compare the old and new facilities, you'll notice tremendous physical differences. The new facility includes the latest in prison design—no stone walls or towers and no corrections specialists armed with shotguns looming overhead. Instead, a 12-foot interior fence and a 14-foot exterior fence, lined with intrusion detectors and razor wire, surround the facility. Incredibly clear closed-circuit cameras and monitors (170 of them) observe practically every inch of the facility. When linked with an exterior roving patrol, the facility is under constant surveillance, from every angle, every minute of every day.

## Facts About the New USDB

Civilian and military staff members wear personal alarm locators (PALs) while inside the facility, replacing the old body alarm system. A PAL can be manually alarmed, and it will alarm if tilted beyond the allowable degree for more than 3 seconds. If it is detached from the staff member, it will also alarm. When a PAL alarms, it identifies the individual and his location so the staff can respond appropriately.

The new USDB contains the following:

- Administration offices
- Visitation room
- Chapel
- Classrooms
- Indoor gymnasium and weight room
- Outdoor softball field with stadium lighting
- Outdoor weight-training area
- Two outdoor basketball courts
- Craft shop
- Dining facility seating 204
- Library
- Vocational shops, such as laundry, barbering, embroidering, graphic art, woodworking, and sheet metal working



*Aerial view of the new USDB*



*Common area inside a housing unit*



*Inmate dining facility*



*Typical individual cell*

The general population of medium- and minimum-custody inmates stays in the bowtie-shaped housing units surrounding the recreation field. The bowtie design enhances security and also provides each inmate with natural lighting from windows in his cell. There are even designated disability cells on the ground floor of each housing area.

## Specifics

Construction approved: 1994

Ribbon-cutting ceremony: 20 September 2002

Cost: $67.8 million

Size: More than 260,000 square feet of living, office, and workspace

Maximum overall housing capacity: 515 inmates

Cell size: 6 feet by 8 feet by 8 feet

Cell equipment: Built-in bed, toilet, sink, and desk

Number of SHU cells: 84

First inmates received at the new USDB: 1 October 2002

# 463d Military Police Company




## Lineage and Honors

Constituted 30 November 1943 as the 63d Military Police Company.

Activated on 1 December 1943 in North Africa.

Inactivated on 17 September 1945 at Camp Kilmer, New Jersey.

Activated 25 August 1947 in the Philippine Islands as the 63d Military Police Company (Philippine Scouts).

Inactivated on 1 June 1949 in the Philippine Islands.

Redesignated on 24 June 1965 as the 463d Military Police Company and allotted to the regular Army.

Activated on 25 June 1965 in Germany.

## Campaign Participation Credit

### World War II

Rome-Arno

### Decorations

Joint Meritorious Unit Award

# 504th Military Police Battalion




### Lineage and Honors

Constituted on 29 July 1921, in the organized Reserves, as the 304th Military Police Battalion.

Organized in April 1922 in Tennessee.

Inactivated in January 1938 in Tennessee; concurrently withdrawn from the organized Reserves and allotted to the regular Army.

Redesignated on 1 June 1940 as the 504th Military Police Battalion; activated on 15 May 1941 at Fort Sam Houston, Texas.

Company D inactivated on 20 June 1942 at Fort Sam Houston, Texas.

Inactivated on 20 January 1947 at Heidelberg, Germany.

Activated on 2 October 1990 at Camp Gordon, Georgia.

Companies A, B, and C inactivated on 3 July 1972 at the Presidio, San Francisco, California.

### Campaign Participation Credit

#### World War II

Tunisia
Sicily (with arrowhead)
Naples-Foggia (with arrowhead)
Anzio (with arrowhead)
Rome-Arno
Southern France (with arrowhead)
Rhineland
Ardennes-Alsace
Central Europe

#### Vietnam

Defense
Counteroffensive
Counteroffensive, Phase II
Counteroffensive, Phase III
Tet Counteroffensive
Counteroffensive, Phase IV
Counteroffensive, Phase V
Counteroffensive, Phase VI
Tet 1969/Counteroffensive
Summer to Fall 1969
Winter to Spring 1970
Sanctuary Counteroffensive
Counteroffensive, Phase V
Consolidation I
Consolidation II
Cease-fire

### Decorations

Meritorious Unit Commendation (streamer embroidered), Vietnam 1965 to 1966
Meritorious Unit Commendation, (streamer embroidered), Vietnam 1968 to 1970
Republic of Vietnam Cross of Gallantry with Palm, (streamer embroidered), Vietnam 1966 to 1972
Republic of Vietnam Civil Action Honor Medal, First Class, (streamer embroidered), Vietnam 1970




# Transforming Training Through the Increased Use of Distance Learning

*By Ms. Sandra Gibson and Mr. Larry Helms*

***"The delivery of standardized individual, collective, and self-development training to soldiers and units anywhere and anytime through the application of information technologies."***

—The U.S. Army definition of distributed learning

The Strategic Plan for Transforming DOD Training, 1 March 2002, recognizes that "transformed training" is the key enabler to transforming the Department of Defense. An essential component for transforming training is the increased use of distance learning methodologies.

In some form or other, distance learning has been an alternative to the traditional classroom for many years. The term *distance learning* was coined by Otto Peters and other practitioners at the University of Tubingen in the 1960s.[1] The term has evolved to *distance education* and most recently *distributed learning* (DL). As early as the 1940s, the U.S. military began employing print-based correspondence courses. Other media delivery used by the military through the years included television; "teleteaching," which used commercial dial-up telephones; electronic blackboards; and more recently, personal computers. In November 1997, the Distance Learning/Training Technology Applications Subcommittee of the Secretary of the Army's Education Committee was established to review and evaluate the status of DL within Army training. In a June 1999 briefing to the Secretary of the Army,[2] the subcommittee recommended that the U.S. Army Training and Doctrine Command (TRADOC) adopt the Internet as The Army Distributed Learning Program (TADLP) distribution backbone, enabling training to be Web-centric in the long term. The subcommittee also added that the Army must use CD-ROMs as a convenient, necessary interim measure while transitioning to the Web. This article provides an update on the status of DL development at the U.S. Army Maneuver Support Center (MANSCEN) Directorate of Training Development (DOTD), Fort Leonard Wood, Missouri, and more specifically, near-term plans for implementing the DL courseware being developed.

During the stand-up of MANSCEN, senior leaders recognized that DL would play a major role in future Army Transformation processes and opted to establish a Multimedia Development Team (MDT) within DOTD. The DOTD MDT has the responsibility to conduct MANSCEN DL contract oversight for contractor-developed courseware, develop selected in-house multimedia products, and upgrade legacy MANSCEN school courseware. The MDT staff is comprised of instructional designers, training technicians, a visual information specialist, and a computer scientist specifically trained to facilitate courseware development at MANSCEN.

To establish the MDT workload, the MANSCEN schools' courseware redesign and development requests are reviewed by MDT and approved by DOTD. Course priorities are determined, based on a careful review of the TRADOC TADLP courseware redesign list published each fiscal year. TRADOC schools may at any time nominate courses to be added to the redesign list. Course nominations are reviewed at TRADOC and prioritized reflecting the Army's strategic needs. Courses accepted on the list are the Army's top priority for DL course redesign. TRADOC allocates DL funds on a priority basis to redesign about forty courses per year. Once the DOTD MDT annual course redesign and development requirements are established, a decision is made whether to conduct some of the funded courseware development work in-house (by requesting a waiver from TRADOC) or to proceed with contracting the work to one of the TRADOC courseware




development contractors. In any case, MDT personnel work closely with MANSCEN DOTD Warrior and school training developers throughout each phase of the development.




Early MANSCEN courseware development efforts were primarily targeted for CD-ROM-based delivery. In 2002, the emphasis changed to developing Web-based courseware. The time required to complete an average forty-hour DL course redesign project in TRADOC is 24-30 months.[3] In an attempt to reduce the overall time required to create courseware at MANSCEN, DOTD has implemented a Rapid Courseware Development Model (RCDM). This model is a new approach not currently used by other TRADOC schools. We requested and received approval to augment the in-house MDT with personnel contracted to develop Instructional Media Design Packages and storyboards on-site under the close watch of MDT. This approach uses highly skilled contracted instructional designers and writers working alongside the in-house MDT, allowing them to be able to redesign and develop 100 hours of interactive courseware this fiscal year. We believe the DOTD RCDM will prove to be a very successful initiative to reduce interactive courseware development time.

Having a reliable, proven avenue for DL implementation is just as important as courseware development. We must have a method and procedures for delivering the completed courseware and providing the essential support that students require in order to have a successful experience with DL. To that end, we developed what we are calling the MANSCEN Advanced Distributed Learning University (ADLU), a three-phased (crawl, walk, run) implementation plan for DL. The overall mission of the ADLU includes—

- Providing the infrastructure and support to facilitate individual, collective, and self-development training anywhere and any time.
- Leveraging cutting-edge DL technologies and methodologies to provide soldiers a lifelong learning experience in a positive, effective, cost-efficient, stimulating, and motivating environment that supports Army Transformation.
- Improving individual and unit readiness.
- Supporting Army DL initiatives.
- Seamlessly integrating the MANSCEN infrastructure with the Army Knowledge Online as the primary gateway to MANSCEN DL.

Major General R.L. Van Antwerp, MANSCEN commander, approved the MANSCEN ADLU Implementation Plan in October 2002, with the first phase of the plan being a test of our student support infrastructure, as well as establishment of the MANSCEN help desk, staffing roles, responsibilities, requirements, and operating procedures.

One of the key components of the MANSCEN ADLU student support interim infrastructure is the DOTD Aspen Learning Management System (LMS). The LMS will allow MANSCEN ADLU students a means to access MANSCEN courseware online. TRADOC is in the process of establishing an objective learning management system (OLMS). When it is fully functional, we will transition to the OLMS. Courses developed to TRADOC's established standards will be compatible with either system. An LMS/OLMS allows us to track such things as student enrollment, student progress, course completion, and student success (test scores).

The MANSCEN ADLU pilot is not only designed for success, but our intent is to harvest valuable experiential data on how best to implement an ADLU at Fort Leonard Wood. To that end, an operations council and a strategic council (council of colonels) will be used to develop, execute, monitor, and review the ADLU pilot. The strategic council, chaired by the DOTD, will—

- Identify the goals and the overall direction for the pilot and subsequent phases.
- Establish and staff the operations council.
- Represent the interests of the MANSCEN schools' commandants (to be represented by the Directors of Training from the Chemical, Engineer, and Military Police Schools) and the Noncommissioned Officers Academy commandant.
- Provide resource recommendations for the ADLU follow-on phases.

The operations council, chaired by the Chief of the Multimedia Development Division, DOTD, will—

- Monitor and manage the ADLU pilot and subsequent phases.
- Actively review and examine the post-pilot results to harvest lessons learned and incorporate them into the subsequent ADLU phases.




- Coordinate student participation for courses identified in the ADLU pilot plan.
- Recommend ADLU improvements and changes to the strategic council.

The first "window of opportunity" for the test or pilot phase of the ADLU Plan is the April-June 2003 time frame. Courseware scheduled for testing includes the—

- 12B10 (Reclass) Combat Engineer Training.
- Nuclear, Biological, Chemical Defense Course.
- Military Police Total Army Training System Advanced Noncommissioned Officers Course.

Our plan is to fully test the infrastructure by including courses for all three proponent schools and students from a variety of locations using various technology levels of automation equipment (varying bandwidths and computer configurations). Such a plan requires a considerable amount of coordination and decision-making. We are currently coordinating with the proponent schools to provide e-mentors/ instructors, the National Guard Bureau to provide students for the pilot, the Directorate of Information Management to establish help telephone lines, the Directorate of Common Leader Training to develop a one-day e-mentor instruction class, and Army Training Requirements and Resources System personnel to ensure that students receive the appropriate credit for the courses they complete. During the pilot phase, a help desk will be manned 12 hours a day, 7 days a week to provide course assistance. The e-mentors/ instructors will be trained to provide basic technical assistance to the students in addition to their subject matter expertise.

At the conclusion of the ADLU pilot phase, the strategic council and the operations council will analyze data collected, based on preestablished goals and success metrics, and formulate lessons learned and ADLU resource requirements from the experience. These lessons learned and recommended improvements and changes will be carried forward to the next MANSCEN ADLU implementation phase.

**Endnotes**

[1] M. Moore and G. Kearsley, *Distance Education: A systems view.* Belmont, California: Wadsworth Publishing Company, 1996.

[2] A.Chute and H. Mehlinger, *Reportout of the Distance Learning /Training Technology Applications Subcommittee to the Secretary of the Army.* Washington, D.C., June 1999.

[3] U.S. Army Audit Agency, Audit Report: A:2002-XXX-FFF. *Courseware Development for Distance Learning*, 18 July 2002, p.1.

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*Ms. Gibson is the chief, Development Support Department, Directorate of Training Development, U.S. Army MANSCEN, Fort Leonard Wood, Missouri. She has worked in the training development arena for about 15 years and also has a background in resource management. Ms. Gibson holds a bachelor's in business administration.*

*Mr. Helms is the chief, Multimedia Development Division, Development Support Department, Directorate of Training Development, U.S. Army MANSCEN, Fort Leonard Wood, Missouri. He is the point of contact for coordination and installation-level management of The Army Distance Learning Program (TADLP) courseware development initiative for Engineer, Military Police, and Chemical School products. Mr. Helms holds a bachelor's in psychology and sociology and a master's in education from Drury University, Springfield, Missouri.*

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# Supporting Logistics—

## Short-Term Holding Facility at Kandahar Airfield

*By Major Ed Lowe and Captain Jean-Michel Guerin*

*Photo by CPT Richard Hughbank*

The current FM 3-0, *Operations*, describes logistics preparation as "assessing the existing theater infrastructure, which greatly affects planning for both combat service support and operations." Assessing the logistical functions and availability of supply assets, regarding the operation and sustainment of the Short-Term Holding Facility (STHF) in Kandahar, Afghanistan, provided a great challenge to the commanders on the ground.

The Headquarters and Headquarters Detachment, 519th Military Police Battalion—reflagged as Task Force 519 MP—deployed to Afghanistan to support Operation Enduring Freedom in early January 2002. Falling under the umbrella of the battalion headquarters was the 108th Military Police Company (Airborne/Air Assault) out of Fort Bragg, North Carolina, and the 16th Military Police Brigade and the 211th Military Police Company of the North Carolina National Guard.

The battalion's chain of command changed as the theater matured. Task Force 519 MP was first task-organized under the Combined Force Land Component Command (CFLCC) and later fell under the 101st Airborne Division (Air Assault). The battalion's main effort centered on the STHF where the suspected Taliban and al Qaeda fighters were being held and interrogated. The challenge to the company and the battalion leadership was ensuring that the logistical flow into the facility remained constant.

### Strategic-Level Considerations

The events of September 11, 2001, certainly provided a target of opportunity not only for the military planners but also for the news media. Such cases as the John Walker Lindh situation attracted media representatives from around the world. Due to the interest in the detainees, the STHF became a major stopping point for media types sending stories back to the United States as well as worldwide. Seeking stories that would be of interest to their readers, the media consistently sought out reports that would be useful to them.

Therefore, it became clear that a reinforced, trained emphasis on the humane treatment of the detainees—in addition to detainee security—had to be a top priority. This in no way suggested that such treatment was warranted simply because of the media focus. However, the soldiers and leaders understood that perceived ill treatment of the detainees could very easily have become a story in the next day's *New York Times*. Hence, the strategic-level considerations had to be understood when handling a situation such as a detention facility. Negative press statements could produce a ripple effect across the operational water—from the Office of the Secretary of Defense down to the young soldier standing guard on a watchtower. From a logistical standpoint, commanders had to observe the supplies that were vital to operate and sustain a detention facility, thus ensuring the adequate treatment of the detainees.

### Tactical-Level Considerations

The location of the STHF presented tactical advantages and disadvantages in this respect. The battalion was located in preexisting structures that were immediately off the Kandahar runway. This facilitated the air

transportation of detainees and supplies. Using the preexisting facilities greatly reduced infrastructure requirements and the manpower necessary for logistical transactions. Conversely, security requirements mandated using floodlights during the hours of darkness, transforming the facility into a truly remarkable target reference point. Host nation laborers, accessing the patrol base throughout the day, could easily have paced off the distances from the facility to key locations in the camp and use that data for targeting.

In addition to developing the detention facility, force protection measures were needed inside the STHF due to the security threat in the area of operations. The battalion constructed force protection bunkers inside the facility that guards could use during different types of enemy- and detainee-based contingencies. Indeed, every improvement to the facility was scrutinized using combat zone considerations as one of the numerous criteria war-gamed during the planning phase. The tactical challenges of establishing and operating a forward-based internment facility had to be carefully considered in addition to the numerous challenges inherent in this type of operation.

## International Committee of the Red Cross

One of the challenges throughout the operation was interacting with the International Committee of the Red Cross (ICRC). The ICRC had almost unfettered access to the facility and the detainees. The battalion commander, Lieutenant Colonel P. Keith Warman, recognizing the importance of this delicate political environment, assigned an officer (dedicated to serve as an inspector general with an escort detail) to work closely with the ICRC civilians. Nested with the strategic-level considerations was the fact that negative reports from the ICRC could also prove detrimental to the military police performing their functions in and around the STHF. This simple yet effective measure, taken to mitigate potential problems, yielded many positive results throughout the battalion's seven-month deployment. By having a representative closely linked to the ICRC, the battalion was able to quickly and effectively ward off problems and concerns that the ICRC representatives identified. Future commanders should take this into account when conducting similar operations.

## Short-Term Versus Long-Term

One area of consistent concern was the fact that the facility was deemed to be a short-term facility. However, many detainees were in the facility for up to 60 days and more. The command often had to wait weeks before the flow of detainees out of the STHF to Guantanamo Bay resumed. Additionally, obtaining the proper amount of supplies at the right time posed a daily challenge for the commanders and staff. Carl von Clausewitz, in his classic *On War*, stated that all logistical requirements depended "...on time." This was indeed the case with operations in the STHF. Time appeared to be the biggest enemy: the amount of time it took for supplies to arrive and the amount of time it took for detainees to be moved out of the facility to a more permanent structure. Remember that everything in and out of the Coalition Joint Operational Area-Afghanistan was transported through a very constricted logistical air bridge. Initially, the STHF was not prepared to maintain and sustain logistical functions for the detainees over a long period of time. However, it soon became apparent, with ICRC representatives eyeing operations and strategic-level considerations being understood, that steps were needed to ensure that the detainees received the type of care that was more consistent with a long-term internment. Such measures included, but were not limited to, washing stations, new detainee uniforms, dental and medical stations, and improved rations.

The battalion instituted several initiatives, including having the engineers dig waste disposal pits so that the MP guard would not have to carry buckets of human waste. A wash station for detainees to field bathe (at least once a week) was also constructed. These small steps helped show the ICRC—and those individuals who had the ability to gain the attention of the strategic-level leadership—that real improvements were being made within the facility.

## Conclusion

The greatest lesson learned at the STHF that must be applied to future operations is that commanders and staffs must be prepared to conduct operations for a long period of time. Staff officers must get deeply involved in the planning process for the logistical units supporting the facility. Once the battalion staff made face-to-face contact with the engineer and support battalions, tangible improvements were seen within the facility.

Task Force 519 MP supported Operation Enduring Freedom successfully. The battalion planned, resourced, and implemented deliberate detainee operation tactics, techniques, and procedures that were focused on detainee and soldier security and safety. Understanding the strategic level of importance that detainee operations had on the overall mission success of the combined/joint coalition in Afghanistan proved to be essential.

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*Major Ed Lowe is the chief of the doctrine division of the U.S. Army Military Police School. He was the executive officer of the 519th Military Police Battalion at the time this article was written.*

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## MILITARY POLICE BRIGADE-LEVEL COMMANDS

| COMMANDER | CSM/SGM | UNIT | LOCATION |
|---|---|---|---|
| Peter M. Champagne | Daniel J. Barry | 8th MP Bde | Yongsan, Korea |
| Brian F. Bocklage | Douglas E. Porterfield | 14th MP Bde | Ft Leonard Wood, MO |
| Samuel J. Hernandez | Jeffrey A. Butler | 16th MP Bde | Ft Bragg, NC |
| Teddy R. Spain | Charles Guyette | 18th MP Bde | Mannheim, GE |
| David D. Phillips | Angela C. Wilson | 89th MP Bde | Ft Hood, TX |
| Gerald A. Mocello | James M. McVeigh | 3d MP Grp (CID) | Ft Gillem, GA |
| Paul R. Capstick | William F. Merrill | 6th MP Grp (CID) | Ft Lewis, WA |
| Donald G. Salo, Jr. | Jeffry S. Huber | 701st MP Grp (CID) | Ft Belvoir, VA |
| Stuart S. Taylor | Thomas J. Colson | 202d MP Grp (CID) | Heidelberg, GE |
| Joel G. Himsl | | Garrison, FLW | Ft Leonard Wood, MO |
| Christopher G. Essig | | Garrison, MDW | Ft Myer, VA |
| Colleen L. McGuire | Keith D. Daly | USDB | Ft Leavenworth, KS |
| Mary Christine Frels | Jerry K. Bennett | 1st MP Bde (P) | Ft Lewis, WA |
| Arnaldo Claudio | Michael P. Hamilton | USAMP Bde, HI | Ft Shafter, HI |
| Jeffrey T. Christiansen | | USA Spt Act I | Camp Red Cloud, Korea |
| | Raul Salinas, Jr. | Garrison | Ft Detrick, MD |
| | Robert Loe | CMDT, MANSCEN NCOA | Ft Leonard Wood, MO |

## RESERVE COMPONENT MILITARY POLICE BRIGADE-LEVEL COMMANDS

| COMMANDER | CSM/SGM | UNIT | LOCATION |
|---|---|---|---|
| Charles R. Brule | Raymond W. Funaro | 43d MP Bde | Warwick, RI |
| Ted Szakmary | Varney D. Smith | 220th MP Bde | Gaithersburg, MD |
| Dion P. Lawrence | Richard N. Espinosa | 260th MP Bde | Washington, DC |
| James Payne | John R. VanNatta | 300th MP Cmd (EPW) | Inkster, MI |
| Paul H. Hill | Roy Clement | 800th MP Bde (EPW) | Uniondale, NY |
| Mitchell Leclaire | Eugene R. Bowman | 177th MP Bde | Taylor, MI |
| Sanford E. Holman | Frank E. Johnson | 1st Bde, 80th Div (IT) | Ft Meade, MD |
| Carl Nolte | David B. Nemec | 367th MP Group (EPW) | Ashley, PA |

## MILITARY POLICE BATTALION-LEVEL COMMANDS

| COMMANDER | CSM/SGM/1SG | UNIT | LOCATION |
|---|---|---|---|
| Allen Scott Jones | Douglas J. Delzeith | 94th MP Bn | Yongsan, Korea |
| Randall E. Twitchell | Mark F. Offerman | 95th MP Bn | Mannheim, GE |
| Wade F. Dennis | Brian K. Lambert | 503d MP Bn | Ft Bragg, NC |
| Thomas H. Tatum | Brian K. Wiles | 504th MP Bn | Ft Lewis, WA |
| Paul K. Warman | Richard W. Schnitker | 519th MP Bn | Ft Polk, LA |
| Richard V. Vanderlinden | Dale J. Paff | 709th MP Bn | Hanau, GE |
| Kim S. Orlando | Michael Hayes | 716th MP Bn | Ft Campbell, KY |
| David J. Poirier | William A. Generalli | 720th MP Bn | Ft Hood, TX |
| Jeffrey A. Mello | Michael T. Sampson | 728th MP Bn | Taegu, Korea |
| Byron A. Freeman | Edgar W. Dahl | 759th MP Bn | Ft Carson, CO |
| Mark S. Spindler | Geraldine M. Rimpley | 793d MP Bn | Bamberg, GE |
| Anthony Cruz | Jeffrey N. Plemmons | 704th MP Bn | Ft Lewis, WA |
| Timothy A. Weathersbee | Izel W. Rhym | 705th MP Bn | Ft Leavenworth, KS |
| Zechara J. Miller | Tommie Hollins | 701st MP Bn | Ft Leonard Wood, MO |
| Donald J. Kennedy | Michael W. True | 787th MP Bn | Ft Leonard Wood, MO |
| Debra A. Sanwaldt | Kevin B. Johnson | 795th MP Bn | Ft Leonard Wood, MO |
| John M. Huey | Charles D. Medley | LEC, 3d MP Bn (P) | Ft Stewart, GA |
| Sabrina M. Sanfillipowebb | Joseph R. Graves | LEC, 25th MP Bn (P) | Schofield Bks, HI |
| Clayton W. Cobb | William J. Ladd | LEC, 10th MP Bn (P) | Ft Drum, NY |
| Pamela L. Martis | Michael E. Meyer | 924th MP Bn | Ft Riley, KS |
| Christy M. Samuels | Clyde E. Davison | LEC | Ft Leonard Wood, MO |
| Stephen M. Wilkins | Deane J. Young | 76th MP Bn (P) | Ft Bliss, TX |
| Bruce E. Vargo | John F. Schoenrock | 5th MP Bn (CID) | Kaiserslautern, GE |
| Marlene R. Carter | Gary B. Belcher | 10th MP Bn (CID) | Ft Bragg, NC |
| Sibylla M. Albertson | Lance R. Brown | 11th MP Bn (CID) | Ft Hood, TX |
| Gregory Robinson Sr. | Benjamin M. Kellam | 19th MP Bn (CID) | Yongsan, Korea |
| Jeffery T. Harris | Carol A. Gorman | 22d MP Bn (CID) | Ft Lewis, WA |
| Mike French | John W. Dillon | CID District | Ft Riley, KS |
| Odie L. Butler III | David Schumann | 3d RGN WA, District | Ft Myer, VA |
| Deborah L. Geiger | Kenneth M. Dowless | 86th CID District | Ft Benning, GA |
| Eric R. Belcher | Craig P. Brott | 31st CID District | Ft Campbell, KY |
| Joe E. Ethridge, Jr. | Paul W. McDonald | 262d CID District | Bamberg, GE |
| Debra Broughton | A. J. Morrow | 254th Base Support | Schinnen, Netherlands |


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