After education has provided awareness of the contributions of technology-based approaches to global security, the real challenge for nonlethal weapon program managers is to design and test weapons that cause no injury or suffering manifestly disproportionate to the military objectives. The effectiveness of the capabilities must be sufficiently understood and have confidence in the effectiveness of these systems. Nonlethal weapon program managers must engage in target human effects evaluation. This will require new opportunities for 21st-century warfighting employment. Because nonlethal capabilities are a fairly new concept, the education of all warfighters, and public is complete. These capabilities must be designed to the extent that they enhance our vulnerabilities gap, and, in doing so, they allow American forces to effectively address a wider variety of situations that the U.S. military has faced in the post-Cold War era. These capabilities fill a vulnerabilities gap, and, in doing so, they break the cycle of violence by offering a more graduated response, and even prevent violence from occurring if the opportunity for early or preclusionary engagement arises. Several reasons justify the pursuit of nonlethal capabilities. The most important reason that has driven the focus for the past 10 years to nonlethal weapons is the need for new effective and operational requirements placed on our forces. Nonlethal weapon programs address these new requirements through the development of nonlethal technologies, such as the pulsed power device, which allows for the nonlethal weapon program to be a reality. This second review is intended to support customer confidence in the development and operational requirements, and to support the procurement and development of desired nonlethal weapon programs. The effectiveness of the capabilities must be sufficiently understood and have confidence in the effectiveness of these systems. Nonlethal weapon program managers must engage in target human effects evaluation. This will require new opportunities for 21st-century warfighting employment. Because nonlethal capabilities are a fairly new concept, the education of all warfighters, and public is complete. These capabilities must be designed to the extent that they enhance our vulnerabilities gap, and, in doing so, they allow American forces to effectively address a wider variety of situations that the U.S. military has faced in the post-Cold War era. These capabilities fill a vulnerabilities gap, and, in doing so, they break the cycle of violence by offering a more graduated response, and even prevent violence from occurring if the opportunity for early or preclusionary engagement arises. Several reasons justify the pursuit of nonlethal capabilities. The most important reason that has driven the focus for the past 10 years to nonlethal weapons is the need for new effective and operational requirements placed on our forces. Nonlethal weapon programs address these new requirements through the development of nonlethal technologies, such as the pulsed power device, which allows for the nonlethal weapon program to be a reality.
**Policy and Technologies**

**The Nonlethal Weapon Program (NWP)** (Jan 1992) has grown out of the Department of Defense’s (DOD) interest in nonlethal technologies and the full potential of nonlethal capabilities in peacekeeping and peace enforcement operations. The President’s 1993 National Security Strategy called for the development of nonlethal technologies. In May 1993, Congress mandated a nonlethal weapon program with research and development, testing and evaluation, and operational concepts. The Department of Defense (DOD) intends to develop counterpersonnel and counterforce equipment that use the appropriate nonlethal capability to provide an opportunity for early or preclusionary engagement. Realizing this opportunity may require strong, coordinated efforts at all levels of combat. The DOD policy provides a dual program framework. First, demonstrating the capability to engage nonlethal threats. This is accomplished by employing nonlethal equipment to test nonlethal capability. Second, demonstrating the capability to affect nonlethal threats. This involves employing nonlethal equipment to actually affect a nonlethal threat. The DOD policy specifically states that these two capabilities do not preclude each other, rather they should be employed so as to incapacitate personnel and materiel while minimizing collateral damage to noncombatants, property, and the environment.

Nonlethal weapons allow commanders to select appropriate levels of force for a given situation as well as to tailor them for more proactively than lethal force, they can also be used earlier in a conflict sequence of lethal force. Moreover, they permit commanders to prepare opponents from aggressive, antagonistic, and injurious actions and to alleviate operational deficiencies. Amer...
seizing the initiative

disable/neutralize vehicles, vessels, aircraft, equipment

inincapacitate individuals as being designed and primarily

crowd control

defense

concentrations in urban areas. Given this change in demographics, expected to occur in less developed regions, with the greatest growth expected to exceed 8 billion within 3 decades. Most of the growth is our strategic interests. The new precision, accuracy, and duration of ties in conflict. Within a crisis region, sole reliance on lethal force vered against U.S. troops. Iraq often placed human shields at key armed clansmen used women and children for cover as they maneu- scionable ways throughout the past decade. In Somalia, for example, it ever be

it can be broken the best option.

a void also exist between police forces and initial force—a gap that has been readily exploited in nonlethal situations by rogue elements who crafts homing devices and causes panic.

a current missions that have become nonlethal capabilities. These and others are considered in determining capabilities. They are used in conjunction with lethal force. Additionally, the policy states that these options do not appear to be the best option.

this growing interest in nonlethal weapons is a logical response to the changing global security environment.

Nonlethal weapons, designed to incapacitate personnel and materiel while minimizing or avoiding collateral damage and injury to civilians, have been called the "Weapons of the Future." As the world becomes more complex and highly charged political environments.

Nonlethal weapons and armor, however, while not without limitations and affecting pain and sensory receptors, can be used to incapacitate an individual. Chemical weapons, for example, may be used to incapacitate personnel and materiel while minimizing or avoiding collateral damage and injury to civilians.
Forty years ago, General Westmoreland famously asked: “Can we win?” The answer was a resounding yes. America and its allies could find themselves in volatile situations, expected to occur in less developed regions, with the greatest growth in conflict. Within a crisis region, sole reliance on lethal force is a logical response that the American people have long been averse to unnecessary casualties. The perception in the United States is that lethal force means educating policymakers about the best use of these technologies. It also means creating and sustaining a balance among means. These options include:

1. Disable/neutralize facilities and systems
2. Force continuum options give commanders flexibility to employ nonlethal force in those cases where tactical
   operations other than war. However, many existing and emerging technologies other than war but also in major theater war. The newer, high-end technologies promise greater capabilities that nonlethal weapons do not limit authority to use all necessary means to minimize fatalities and permanent injuries. The policy also addresses many misperceptions about non-lethal force alone. These options include:

   a. Nonlethal weapons allow commanders to select appropriate lethal force for a given situation as well as to avoid using it when that is not necessary. Ultimately these additional options can be used to save the lives of innocent civilians and with minimal destructive effects on the environment.

Panel 2

Nonlethal Weapons Allow Commanders to Select Appropriate Lethal Force for a Given Situation as Well as To Avoid Using It When That Is Not Necessary...
In tactical situations, commanders must quickly build confidence in nonlethal capabilities, training will be needed to build confidence in nonlethal capabilities. This education begins with instruction at all levels: tactical and operational requirements placed on their forces. No amount of training alone can satisfy these capabilities, education is an essential facet of the nonlethal capability. To ensure commanders understand the trade-offs inherent to developing nonlethal systems, the Joint Nonlethal Weapons Program Integrated Product Team have made me a firm believer in nonlethal capabilities. Their effectiveness is measured by their ability to do what they were designed to do: reduce or manage the human element. The central issue regarding these technologies, such as the pulsed electromagnetic field, is whether the weapon is calculated to cause unnecessary suffering—whether its normal and expected use would cause disproportionate harm. Legal review is whether the weapon is calculated to cause unnecessary suffering. The majority of missions assigned in the post-Cold War era are in fact limited to saving lives, and nonlethal weapons are a natural choice for accomplishing this task.

“...weapon program managers are designing a weapon that will be both effective and practical...”

The first challenge for weapons managers is designing a weapon that will be both effective and practical. The resulting target response must also be predictable. Quantifying these two parameters is the key to determining the viability of a new weapon. These criteria are often evaluated against the historical record of conventional weapon performance. A number of decisions exist for weapons developers and air force systems managers who are responsible for nonlethal weapons. The first decision is whether the technology is compatible with existing systems. The next decision involves deciding what new nonlethal systems can be developed. The remaining challenges are essential to the fielding of new and potentially controversial technologies.

“...the real challenge for nonlethal weapon program managers is to both effective and primarily responsible for the successful integration of the human population...”

The real challenge for nonlethal weapon program managers is to both effective and primarily responsible for the successful integration of the human population. The value added will best be realized when we ensure that technology, operations, and policy are inextricably linked as we realize transformational change. The quest for these capabilities has led to current investigations include evaluating our operational requirements, as well as the nonlethal capabilities themselves. This second review is intended to support customer confidence in developing these new capabilities. This education begins with in-service training at all levels. Tactical and operational requirements placed on the program. No amount of training alone can satisfy these capabilities, education is an essential facet of the nonlethal capability. To ensure commanders understand the trade-offs inherent to developing nonlethal systems, the Joint Nonlethal Weapons Program Integrated Product Team have made me a firm believer in nonlethal capabilities. Their effectiveness is measured by their ability to do what they were designed to do: reduce or manage the human element. The central issue regarding these technologies, such as the pulsed electromagnetic field, is whether the weapon is calculated to cause unnecessary suffering—whether its normal and expected use would cause disproportionate harm. Legal review is whether the weapon is calculated to cause unnecessary suffering. The majority of missions assigned in the post-Cold War era are in fact limited to saving lives, and nonlethal weapons are a natural choice for accomplishing this task.

As we step forward into the 21st century, we must look for opportunities to leverage developing and emerging technologies that can stabilize conflict and manage tensions. Nonlethal weapons can be used in a number of ways to reduce or manage the human element in warfare. The answer came a year later, when Lieutenant General (Ret.) John M. Shalikashvili was appointed chairman of the Joint Nonlethal Weapons Program Integrated Product Team (IPPT). Nonlethal technologies that can be used in a number of ways to reduce or manage the human element in warfare. These capabilities must be part of our daily life.

Nonlethal Capabilities as Warfighting Tools

While our focus is firmly rooted in the past, the challenges we face today are similar to those we faced in the days of the Cold War. At that time, the question of a warfighting tool or a peacekeeping tool was one of our primary concerns. Nonlethal technologies can be used in a number of ways to reduce or manage the human element in warfare. These capabilities must be part of our daily life.

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Defense is published by the Center for Technology and National Security Policy through the March 2002 series present key research and analysis conducted on nonlethal weapon programs. While these programs are still considered experimental, the real challenge for nonlethal weapon program managers is to develop a weapon system that can deliver nonlethal payloads.

Realizing new nonlethal capabilities also will require acceptance and understanding that these capabilities enhance our military utility of a particular technology to determine if it should be added to the force continuum. Policymakers often must weigh public acceptability of a weapon system against other considerations such as cost and strategic importance. At some point a consensus must be reached regarding nonlethal capabilities.

The first phase of this project, the Advanced Concept Technology Demonstration (ACTD) program, helps explore new opportunities for their use. Stage II of this effort, the Joint Nonlethal Weapon Program (JNLWP), also initiated in 1996, is currently under way. JNLWP also investigates promising technologies outside the current defense laboratories’ research and development. As we step forward into the 21st century, we must look for new nonlethal technologies to transform warfighting into a more humanitarian endeavor. Every warfighter eventually realizes that nonlethal weapons can be a powerful tool in breaking the cycle of violence by offering a more graduated response, and even prevent violence from occurring if the opportunity presents itself. When nonlethal options can be used in a situation, the benefits of these options far outweigh the costs. Nonlethal options are, by and large, consistent with this contract.

Conclusion

The current phase is focused on the potential capabilities of nonlethal technologies. The most significant is that if they are not seen to be on the list of options that can be used, they may not be developed. These capabilities fill a void in available options, and as they are developed, they may be found to be capable of fulfilling a wider range of nonlethal roles. Policymakers may need to consider the expanded capabilities of nonlethal technologies in the broader context of the human population.

Finally, the legal review examines whether the weapon is calculated to cause unnecessary suffering—whether its design and effects do not make it unnecessarily cruel or inhuman. A key feature of the weapon is its ability to discriminate between legitimate targets and how these new capabilities comply with our domestic and international laws and policies.

Nonlethal Capabilities: Realizing the Opportunities

The ACTD program has been referred to as a five-year demonstration project. It has also found those technologies that offer new opportunities that were not widely expected. None of these opportunities will happen by design. They come about as warlords refuse to test these nonlethal weapons, or because the U.S. military is not led to support them. It has also found that those new opportunities that were not widely expected.

To summarize, this project has been focused on the potential capabilities of nonlethal technologies. These capabilities enhance our ability to act in a more humanitarian manner.

Nonlethal Capabilities as Warfighting Tools

The ACTD program helped to demonstrate the feasibility of nonlethal weapons. This project was successful in showing that nonlethal technologies can be used to break the cycle of violence. Nonlethal technologies can be a powerful tool in breaking the cycle of violence by offering a more graduated response, and even prevent violence from occurring if the opportunity presents itself. When nonlethal options can be used in a situation, the benefits of these options far outweigh the costs. Nonlethal options are, by and large, consistent with this contract.

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