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Title: NON-LETHAL DEFENSE OPTIONS FOR FUTURE CONFLICT

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Non-Lethal Defense Options for Future Conflict

The Persian Gulf war was a turning point in American defense. U.S. military forces demonstrated their high-tech arsenal with amazing results and emphatically justified the long-term investment in smart munitions, stealth aircraft, Tomahawk cruise missiles, and other advanced systems. The world watched in awe as our warfighting capability devastated the Iraqi forces.

However, one of the lessons learned—that you don't take on the U.S., nose-to-nose—may make future campaigns more difficult. The answer to how future adversaries will engage us is already beginning to emerge. Potential adversaries will carefully calculate how far they can push before the U.S. mounts an armed response, one that may cause casualties.

A term that may be applicable to this new condition is "incremental aggression;" the escalation of events to test the limits of American resolve. To respond in ambiguous situations that are inherently caused by incremental aggression, new options are required. Some of these options should be non-lethal in nature.

Non-lethal weapons can disrupt, destroy, or otherwise degrade the efficient function of a potential adversary's materiel. By degrading the adversary's infrastructure, or attacking their machines of war, non-lethal weapons can provide a range of new options for our decision makers and seriously affect the adversary's ability to do battle.

Los Alamos spokesman for non-lethal technology, Dr. John Alexander, said that non-lethal weapons could be advantageous in the post-Cold War world.

"Non-lethal weapons allow us to project power in regimes that are currently difficult to handle," he said "The marvelous thing here is that non-lethal weapons operate across the entire spectrum of conflict. They can bring a modern, industrial society to its knees or disarm a 14-year-old who's toting an AK-47 in a third world country."

Non-lethal weapons can be used as "technological sanctions" or "coercive diplomacy" that expand the options between diplomacy and war that are available to civilian and military leaders. With them, positive action can be taken and yet, by holding short of the "death barrier," there is more room for alternative solutions.

How many casualties we take and cause in any military operation is now an important factor in any decision to apply American military force. Minimizing American casualties is am imperative. Even controlling enemy casualties is highly desirable in many cases when you consider that many third world soldiers are conscripts who have little interest in the political issues involved.

Operation Provide Hope, for instance, is ostensibly a humanitarian relief effort to feed starving people. Somali irregular forces have killed a number of U.N. peacekeepers, including several Americans. Dozens of Somali noncombatants have also been killed in the process.

Our troops have been shot at by gunmen concealed in a crowd of innocent bystanders and were ambushed after driving over a land mine. A lethal response to attacks like these is currently the only available option even though the initial mission was simply to save people from starving.

In Operation Just Cause, we wanted Noriega out, but with minimum disruption to our relations with the Panamanian people. There were times when we chose not to use certain weapons because of the risks for collateral damage or casualties. In such situations, we need weapons that can be relatively safely employed.

In Bosnia, we face a similar situation: sorting noncombatant from adversary in someplace other than a morgue. When we kill noncombatants, even accidentally, we lose the support of the local populace. Clearly, non-lethal weapons would be advantageous in such situations.

Technological Sanctions, as some application of non-lethal weaponry might be called, span the spectrum of warfare, from deterrence all the way up to strategic immobilization of an entire country.

"It is postulated that the development of non-lethal weapons systems would be a deterrent in some situations," Alexander explained. "For example, drug smugglers are 100% convinced that the U.S. will never employ lethal force against them if they do not shoot first. These technologies could change that."

Non-lethal warfare is part of the transition from industrial-era wars of direct-fire attrition to information-age wars in which the emphasis is on paralyzing the adversary, not necessarily destroying him. According to Alexander, the idea is that you want least to fight the fielded forces.

"They can hurt you," he says. "So, you go after the command and control aspects and the logistic. If you can take that away, they can't fight."

Within the last 18 months, several of the commanders of America's fighting commands have sent mission needs statements asking for non-lethal weapons. A number of other high-ranking officers are enthusiastic supporters of non-lethal weapons development because of the increased flexibility U.S. forces would enjoy on any battlefield.

Due to classification, discussion of specific non-lethal technologies is difficult, but they are real. Their maturity ranges from weapons that are immediately available to those requiring long-range development. A number of projects are under way at defense laboratories, including Los Alamos.

•Electromagnetic weapons
••Low-energy laser rifles or rifles employing rounds called Battlefield Optical Munitions (BOM) can blind sensors on the battlefield. The heart of the BOM is a selection of plastic dye laser rods that will lase at frequencies tuned to attack modern sensors on the battlefield.

•Acoustic generators
••Weapons that generate sound tuned to deter or incapacitate humans, while leaving no lingering physical or environmental damage. Such technology would be useful in protecting facilities, such as military bases and embassies. Used on a defensive perimeter, the acoustic generators would first alert intruders. If the intruders continued forward, the sound output of the generators would deter them from coming further. Finally, if they persisted, the devices could incapacitate them.

•Special materials technology
••Antitraction technologies that use polymer and viscosification agents to interfere with the ability of machines to operate efficiently, or sticky foams and glues that can obscure visual systems and even inhibit mobility;
••Combustion alteration technology that will inhibit or enhance the combustion in engines;
••Los Alamos efforts in bioremediation use microbes to degrade many kinds of waste. The microbes use energetic materials, such as fuel or explosives, as food and produce nothing more harmful than water and carbon dioxide. These microbes are not harmful to plants or animals and will die when they finish digesting the materials they are feeding on.

In addition to military requirements, there are numerous civil sector law enforcement application. The Justice Department has been conducting a "less-than-lethal" program for a number of years that focuses on antipersonnel measures such as incapacitating agents.

Non-lethal weapons provide important options to everyone from the President to the G.I. walking the street in some third world country to police officers trying to stop a high speed chase or quell a riot. They allow action to be taken when other options have failed.

"In my opinion," said Alexander, "the nature of conflict is changing and this is the warfare of the future."

The Los Alamos National Laboratory, supported by the American Defense Preparedness Association, is sponsoring a classified non-lethal conference at the Applied Physics Laboratory of Johns Hopkins University on November 16 and 17. For further information, contact CAPT Nelson P. Jackson, USN (Ret.) at (703)522-1820.