# EVALUATING THE U.S. MILITARY'S DEVELOPMENT OF STRATEGIC AND OPERATIONAL DOCTRINE FOR NON-LETHAL WEAPONS IN A COMPLEX SECURITY ENVIRONMENT

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

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M.S., Naval Postgraduate School, Monterey, California, 1997

Fort Leavenworth, Kansas
2003

# Report Documentation Page

*Form Approved*
*OMB No. 0704-0188*



| 1. REPORT DATE | 2. REPORT TYPE | 3. DATES COVERED |
|---|---|---|
| **06 JUN 2003** | | **-** |

| 4. TITLE AND SUBTITLE | 5a. CONTRACT NUMBER |
|---|---|
| **Evaluating the U.S. Military's development of strategic and operational doctrine for non-lethal weapons in a complex security environment** | 5b. GRANT NUMBER |
| | 5c. PROGRAM ELEMENT NUMBER |
| 6. AUTHOR(S) | 5d. PROJECT NUMBER |
| **James Ogawa** | 5e. TASK NUMBER |
| | 5f. WORK UNIT NUMBER |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) | 8. PERFORMING ORGANIZATION REPORT NUMBER |
| **US Army Command and General Staff College,1 Reynolds Ave.,Fort Leavenworth,KS,66027-1352** | **ATZL-SWD-GD** |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | 10. SPONSOR/MONITOR'S ACRONYM(S) |
| | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) |

12. DISTRIBUTION/AVAILABILITY STATEMENT

**Approved for public release; distribution unlimited**

13. SUPPLEMENTARY NOTES

14. ABSTRACT

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15. SUBJECT TERMS

| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES | 19a. NAME OF RESPONSIBLE PERSON |
|---|---|---|---|---|---|
| a. REPORT | b. ABSTRACT | c. THIS PAGE | | | |
| **unclassified** | **unclassified** | **unclassified** | **1** | **138** | |

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: Lieutenant Commander James S. Ogawa

Thesis Title: Evaluating the U.S. Military's Development of Strategic and Operational Doctrine for Non-Lethal Weapons in a Complex Security Environment

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

EVALUATING THE U.S. MILITARY'S DEVELOPMENT OF STRATEGIC AND OPERATIONAL DOCTRINE FOR NON-LETHAL WEAPONS IN A COMPLEX SECURITY ENVIRONMENT, by LCDR James S. Ogawa, 139 pages.

The end of the Cold War gave rise to a complex security environment resulting in a fundamental shift of focus from unrestricted warfare against a well-defined enemy towards a wide variety of military operations other than war (MOOTW) characterized by urbanized terrain, joint expeditions, non-state actors, and asymmetric threats. However, it is in exactly this kind of complex environment that non-lethal weapons (NLWs) can make major contributions by enabling more effective political-military strategies, and potentially changing the nature of war itself. To date, no joint doctrinal guidance on NLWs has been published. As a result of a lack of NLWs doctrine, there is an increased risk that NLWs supporting activities develop inefficiently, haphazardly, and possibly ineffectively. Thus, the central question is whether service publications or doctrine, training, leader development, organization, materiel, and soldier support (DTLOMS) exist which provide the US Government's or services' policies and goals of its application of NLWs in a complex security environment? Four major areas are analyzed: military doctrine's role in shaping future technologies, the purpose of joint doctrine, the dynamics of MOOTW and peace support operations (PSOs), and finally, services as well as joint implementation and exploration of NLWs doctrine.

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to several individuals who contributed substantially to the development of this thesis. First and foremost, I would like to thank my thesis committee for their patience and flexibility in constructing this paper. I would also like to thank my wife, Michelle, and my daughter, Megan, for helping with the little things that has decidedly amounted to a mountain of support.

Personal interviews and correspondence provided invaluable contributions with respect to the latest status of the non-lethal weapons (NLWs) field from the viewpoints of Joint programs to those of each of the services. Commander Jay D. Bottleson provided the latest information on the Joint Non-lethal Weapons Directorate's (JNLWD) program. Mr. Ricky M. Rowlett from the Joint Warfighting Center (JWFC) and Mr. John Fenter from the Joint Forces Command provided an updated view of the progress being made by the Joint Command. The NLWs Central Action Officers (CAOs) and the Program Support Officers (PSOs) for each of the services provided invaluable insights into the developments within their own service as well as the others with a remarkable spirit of "jointness." At the time of this paper the CAOs and PSOs were: From the U.S. Air Force, Captain Jereme Barrett and Mr. Sal Hernandez; From the U.S. Special Operations Command, Mr. Randy Murphy and Mr. Robert Graus; From the U.S. Marine Corps, Mr. Ray Grundy and Mr. Jeff Hoke; From the U.S. Navy, Lieutenant Commander Leith Parslow and Ms. Charlene Rusnak; From the U.S. Army, Lieutenant Colonel Michael Avery and Mr. Bo Barbour.

Special thanks goes to Captain Conlon Carabine, U.S. Marine Corps, Officer in Charge of INIWIC (Interservice Non-Lethal Individual Weapons Instructor Course) and

Gunnery Sergeant G. A. Long, U.S. Marine Corps, an INIWIC instructor, for providing an in-depth overview of their program. And finally, special thanks goes to Colonel Timothy Lamb, U.S. Army, Assistant Commandant, US Army MP School, Major Bob Buzan at the U.S. Army MP School's Non-lethal Center of Excellence and Mr. Jo Barnes at the US Army MP School's Doctrine Office, for providing the Army's developments in NLWs.

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ACRONYMS

| | |
|---|---|
| ADT | Area denial technology |
| C2 | Command and Control |
| CALL | Center for Army Lessons Learned |
| CARL | Combined Arms Research Library |
| CFR | Council on Foreign Relations |
| CJCS | Chairman, Joint Chiefs of Staff |
| COMCOM | Combatant Commander |
| DoD | Department of Defense |
| DOTMLPF | Doctrine, organization, training, material, leadership, personnel, and facility |
| DTLOMS | Doctrine, training, leader development, organization, materiel, and soldier support |
| FY | Fiscal year |
| GPS | Global Positioning System |
| INIWIC | Interservice Non-Lethal Individual Weapons Instructor Course |
| JCS | Joint Chiefs of Staff |
| JMAA | Joint mission area analysis |
| JMNA | Joint mission needs analysis |
| JNLWD | Joint Non-Lethal Weapons Directorate |
| JNLWP | Joint Non-Lethal Weapons Program |
| JP | Joint Publication |
| MEF | Marine Expeditionary Force |

| | |
|---|---|
| MAA | Mission area analysis |
| MLRS | Multiple-Launch Rocket System |
| MOA | Memorandum of agreement |
| MOOTW | Military operations other than war |
| MOUT | Military operations on urbanized terrain |
| MP | Military police |
| MNA | Mission needs analysis |
| MNS | Mission needs statement |
| NCA | National Command Authority |
| NDAA | National Defense Authorization Act |
| NGO | Non-government organization |
| NLW | Non-lethal weapon |
| NLWCS | Non-lethal weapon capability set |
| NMS | National Military Strategy |
| NSS | National Security Strategy |
| OIC | Officer in charge |
| ORD | Operational requirements document |
| PSO | Peace support operation |
| ROE | Rules of engagement |
| TRADOC | US Army Training and Doctrine Command |
| TTP | Tactics, techniques and procedures |
| UJTL | Universal Joint Task List |
| UN | United Nations |

| | |
|---|---|
| US | United States |
| USMC | United States Marine Corps |
| USNI | United States Naval Institute |
| WMD | Weapons of mass destruction |

# TABLES

# CHAPTER 1

# INTRODUCTION

## Nature of the Problem

A brief review of the history of war with respect to noncombatant casualties shows an unsettling trend. At the conclusion of the American Revolution, civilian deaths were practically negligible compared to the 34,000 military casualties. By the 1950s, however, "noncombatants accounted for about half of all war casualties; by the 1980s, noncombatant casualties had increased to 80 percent. This alarming trend has continued into the 1990s,"[1] with increasing numbers of refugees, immigrants, and noncombatants caught in the crossfire of nationalistic rivalries, and civil and ethnic strife.[2] In addition to preparing for future battles involving nation states, the United States (US) military has found the need to prepare for an increasingly complex security environment with future battles involving rogue states, failed nation-states, criminal, and terrorist organizations.[3]

The fact that the US will be more closely engaged in this type of complex security environment can be seen in the rise in United Nations (UN) sponsored interventions since 1990. In *Future War*, John B. Alexander notes, "In the 45 years prior to that time [1990], the UN authorized use of force 6 times. Between 1990 and 1996, it voted in favor of forceful intervention 61 times."[4] Since the initial deployment of US forces to Somalia, other peace support operations (PSOs) have rapidly followed with deployments to Haiti (Operation UPHOLD DEMOCRACY), Bosnia-Herzegovina (Operation JOINT FORGE), East Timor (Operation WARDEN), and Kosovo (Operation JOINT GUARDIAN).[5] During the month of December 1998, the Army alone had 35,393

soldiers deployed in 252 missions in 60 countries worldwide.[6] These operations have resulted in a fundamental shift of focus from unrestricted warfare against a well-defined enemy towards a more complex security environment which includes military operations other than war (MOOTW) characterized by urbanized terrain, joint expeditions, non-state actors, and asymmetric threats.[7]

One indication of the US military's growing concern with complexities of urbanism was the initial addition of a *Handbook for Joint Urban Operations*, dated 17 May 2000, which was a primer for the new Joint Publication, *Doctrine for Joint Urban Operations*, dated 16 Sep 2002.[8] A study by the UN states that the urban population of developing countries worldwide increases by approximately 150,000 each day[9] in undeveloped societies in crisis-prone regions of the world.[10] Other studies estimates that approximately 44 percent of the world will live in urban areas by 2005,[11] increasing to 60 percent by the year 2015,[12] and theoretically reaching the maximum population the world's resources can sustain between 2020 and 2030.[13]

> Joint urban operations involve a variety of unique operational considerations such as extensive man-made construction, large non-combatant populations, and complex sociological, political, economic, and cultural interactions within those populations. To overcome these challenges, US military forces must be able to apply the full range of tools available to a commander tasked with conducting joint urban operations.[14]

Urban environments require soldiers to engage opponents in close quarters which allows a less technologically capable force to achieve a greater semblance of parity.[15] Urban environments provide another challenge by presenting the high probability of damage to civilian personnel and property. Concern for damage to civilian personnel and property continues to be a major factor for two reasons. First, recent history has shown

that it is usually the victor who bears the heavier financial burden of rebuilding a country's political and economic infrastructure.[16] The US spent millions to repair damage resulting from operations URGENT FURY in Grenada in1983, and JUST CAUSE in Panama in 1989.[17] Although PSOs are not structured to have a victor, the responsibilities incurred by the forces assigned to a PSO amounts to the same, or possibly greater, perceived financial liability.[18] Clearly, if the political objective of PSOs is to restore order to a region or nation, causing massive infrastructure damage in the process is counterproductive.[19] Second, the successful employment of precision weapons has created the expectation of greater discrimination and, understandably, less tolerance for civilian casualties and property damage by political decision-makers and the public in general.[20]

There is a more subtle reason to focus on damage to civilian personnel and property. It is the observation that a PSO's operational and strategic level of success is beginning to hinge on maintaining the moral high ground and political legitimacy.[21] One interesting ramification of this phenomenon is that in order to sustain public support for the use of force, the US will have to go to great lengths to limit its destructiveness regardless of conducting operations in compliance with *jus in bello*.[22] *Jus in bello* encompasses the two principles of discrimination and proportionality and expands into the concept of "double effect."[23] Thus, in accordance with *jus in bello*, a commander is not bound to forego a particularly valuable target because there is a remote chance of noncombatant injury or death.[24] The reasoning for this phenomenon is simple, and it provides an argument in favor of non-lethal weapons (NLWs). It is best expressed in the *Joint Concept for Non-Lethal Weapons*:

> Although the US military conducts operations in a manner consistent with treaties, international law, US Policy, and establishes constraints on military actions (proportionality and necessity) to minimize collateral damage and preserve legitimacy, there is another factor. When collateral damage occurs- even as the unavoidable result of actions taken under clear military necessity- they are immediately and graphically reported worldwide by network media. Such reporting often creates considerable local, international, or domestic US opposition to the continued presence of US forces in the area of crisis. This can result in a loss of perceived legitimacy and severely limit the utility of military forces as a policy option in the furtherance of national interests.[25]

In his 1999 book *Future War,* John B. Alexander describes the need for the US military services to transform into a, "versatile force capable of deferring or vanquishing an enemy regardless how strong, yet one that is able to impose our will in complex, often illusive situations that demand restraint."[26] One example of a more joint, versatile force can be seen in General Eric K. Shinseki's transformation strategy. A white paper discussing the US Army's transformation argues that[27] the Army's Objective Force, "must be harmonized with similar efforts of other services. Army transformation is grounded in the operational framework of joint doctrine…and the concepts of future joint and combined operations."[28] Furthermore, this transformation directly supports Joint Vision 2020:

> The joint force, because of its flexibility and responsiveness, will remain the key to operational success in the future. To build the most effective force for 2020, we must be fully joint: intellectually, operationally, organizationally, doctrinally, and technically.[29]

Non-state actors such as terrorist groups or drug cartels will pose an increasing threat to the US and global stability since such groups are not normally capable of challenging conventional militaries.[30] Non-state actors are equally likely to attempt to deny the US the maximum advantages derived from its superior systems.[31] Future adversaries will likely make use of tactics that stretch the rules of acceptable conduct and

utilize asymmetric campaigns to level-the-playing-field with more technologically advanced militaries.[32] President Clinton acknowledged this in his National Security Strategy (NSS) back in 2000.

> Because of our dominance in the conventional military arena, adversaries who challenge the U.S. are likely to use asymmetric means, such as weapons of mass destruction (WMDs), information operations or terrorism. [33]

Furthermore, the complex security environment, described above, will be exacerbated by groups of people who have limited or narrow issues in common. In *Future War*, John B. Alexander warns that, "given access in the internet, groups can form that have no physical connection with one another, mobilized to accomplish a task, and then disappear."[34]

The complex security environment poses significant political-military challenges in which future threats, "adopt many of the operational characteristics of terrorist organizations, leading to a blurring of traditional military missions and counter-terrorism responses."[35] The trend towards an increasingly complex security environment will likely continue well into the 21st century. It is in exactly this kind of complex security environment, however, that NLWs can make major contributions by enabling more effective political-military strategies and potentially changing the nature of war itself.[36]

## Significance of the Study

> At the very heart of war lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is fundamental to sound judgment.
>
> General Curtis LeMay, *Joint Pub 2-0*

Several studies have attempted to assess the wide range of emergent NLW technologies and have recommended that joint doctrine be developed for their operational and strategic use. In 1999, Lieutenant Colonel Joseph M. Perry, US Marine Corps (USMC), did one such study titled, "Joint Doctrine for Non-lethal Weapons." By researching the joint doctrinal developments made up to that point, examining the development of NLWs technology, and comparing the operational capabilities of NLWs with the current NSS and National Military Strategy (NMS), LtCol Perry concluded that there was a need for NLW joint doctrine. In addition, LtCol Perry noted that there was a considerable void in NLW doctrinal publications.[37]

It has been four years since LtCol Perry conducted his study and a critical review for NLW strategic and operational guidance of the joint publications confirms no movement exists to develop a joint publication for the employment of NLWs despite today's complex security environment. The US Army, US Navy, US Air Force, and USMC have approved a multi-service tactics, techniques, and procedures (TTPs) for the tactical employment of a standardized NLW capability set (NLWCS) and trainers certified at the unit level. Prior to 1999, LtCol Perry further noted an overall lacking of joint doctrinal guidance and service NLWs doctrinal publications. Have other sources of doctrine developed since 1999 that are guiding the development of NLWs employment? More specifically, the fundamental question that this study will answer is whether service publications or doctrine, training, leader development, organization, materiel, and soldier support (DTLOMS) exist which provide the US Government's or services' policies and goals of its application of NLWs in a complex security environment?

The basic focus on doctrine is valid, since there are several historical examples of proposed doctrine characteristically shaping the entire composition of a fighting force. In addition to supporting national interests and providing how to conduct operations, doctrine serves as a guide for supporting technological development and conducting training. Lack of doctrine increases the risk that these supporting activities develop inefficiently, haphazardly, and ineffectively.[38]

Subordinate questions that this thesis will examine are: (1) Do joint DTLOMS or other expressions of policy fill the apparent gap between strategic/operational doctrine and the recently revised *Multi-service Procedures for the Tactical Employment of NLWs*? (2) Is there even a need for joint NLW doctrine above the tactical level of war? If so, what should be a part of a joint NLW doctrine? (3) Does existing doctrine address the consequences of equipping and using NLWs? (4) Which of the services has developed or is developing NLW doctrine above the tactical level better than the others?

## Background

With the fragmentation of the Soviet Union in October of 1991, the United States became the world's supreme military power.[39] The world suddenly presented a whole new strategic environment in which stability became the main focus.[40] While the US is best prepared for large-scale armed conflict, global economic interdependence, the spread of democracy, and American military dominance significantly decrease the likelihood of their occurrence.[41] Prior to the official end of the Cold War in March of 1991, then-Secretary of Defense Dick Cheney and Defense Undersecretary Paul D. Wolfowitz established a non-lethal warfare study group.[42] This study group correctly foresaw the types of security threats the US would face in the future and advocated a non-lethal

defense initiative modeled after the Strategic Defense Initiative.[43] Their plan was to allow the non-lethal defense initiative to support a wide range of policies and programs to encourage the development of NLWs.[44] That same year, the US Army Training and Doctrine Command (TRADOC) began work to begin identifying feasible means to achieve military aims under the concept of "Minimal Force Operations."[45] Unfortunately, with the end of the first Bush Administration, the non-lethal warfare study group's findings were tabled with the transition to the Clinton Administration.[46] It would be less than a year, however, until events at home and abroad renewed interest in NLW capabilities.

Two events in 1993 renewed interest in the potential benefits of NLWs. The first was the botched take down of the Branch Davidian compound in Waco, Texas, in a standoff with local and federal authorities from 28 February to 19 April 1993. The second involved US forces conducting a PSO in Mogadishu, Somalia, which resulted in high civilian losses graphically illustrated in "Black Hawk Down."[47] When 1st Marine Expeditionary Force (MEF) successfully employed NLWs for the first time during Operation UNITED SHIELD in February 1995, Lieutenant General Zinni (USMC) became the prime advocate for NLWs and the options to deadly force they made available. This was not the first time NLWs were used in a PSO, but 1st MEF's use was characteristically different in one important respect. General Zinni's Marines had trained and thoroughly integrated NLWs into their operations. The results were significant. Tactically, NLWs were employed for force protection.[48] Operationally, NLWs helped accomplish critical objectives.[49] Strategically, "the effective use of NLWs focused the world's attention on the restraint demonstrated by U.N. peacekeeping forces . . . and

provided a model for future contingency operations, as in Haiti and Bosnia."[50] Reflecting on his experience in Somalia, General Zinni later commented,

> There's a role for [non-lethal weapons] in operations other than war because we need to be able to control certain situations that do not require deadly force. And we need more options. . . . This gives us a lot more flexibility and capability. I don't think a lot of people realize how complex [Mogadishu] was and the potential for it to go bad.[51]

The Department of Defense (DoD) Directive 3000.3 (DoDD 3000.3), "Policy for Non-Lethal Weapons," was issued on 9 July 1996 as a direct result of Gen. Zinni's advocacy of NLWs. DoDD 3000.3 established DoD NLWs policies as well as assigned responsibilities for the development and employment of NLWs, and designated the Commandant of the Marine Corps as the DoD NLW program's Executive Agent. According to DoDD 3000.3, NLWs are "explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment."[52]

DoDD 3000.3 also makes clear expressions of US policy with respect to NLWs.[53] First, NLWs are capable of producing fatalities. Second, NLWs do not limit a commander's right to self-defense. Third, having NLWs does not obligate their use prior to employment of force provided for by applicable law. Fourth, NLWs may be used in conjunction with lethal force. The DoD Directive further specifies that NLWs augment, rather than replace, lethal weapons, and that their effects must be relatively reversible on personnel or materiel in order to decrease the post-conflict costs of reconstruction.[54] Lastly, the DoD Directive assigns the Under Secretary of Defense of Acquisition and Technology with Joint Non-lethal Weapons Directorate (JNLWD) program oversight responsibility, and the Assistant Secretary of Defense of Special Operations and Low-

intensity Conflict with NLW development and employment policy oversight.[55] The National Defense Authorization Act (NDAA) reflected the DoDD 3000.3 policies.[56]

In Fiscal Year (FY) 1997, section 230 of the NDAA included a program element to consolidate and integrate the DoD and NLW technology with those of the individual military services.[57] As a direct result, the services' signed the first memorandum of agreement (MOA) that same year. The MOA's objective was to establish the JNLWD as a fully integrated and coordinated NLW development program.[58] The next year, the NDAA for FY 1998 expressed the importance of developing advanced NLW technologies. The requirement to develop advanced NLW technologies provided the services with greater flexibility to manage, shape, deter, or contain future conflicts.[59] However, the rapid developments being made in the US were not matched with the same enthusiasm outside the US.

Internationally, interest in NLWs was developing much more slowly. One of the groups attempting to find common ground with its coalition partners was the NATO Defense Research Group. In 1999, NATO issued their NLW policy statement:

> It is NATO policy that non-lethal weapons, relevant concepts of operations, doctrine, and operational requirements shall be designed to expand the range of options available to NATO military authorities. [NLWs] are meant to complement the conventional weapons systems at NATO's disposal.[60]

However, as rapid as the US seemed to have been moving with the development of NLWs in comparison to the international scene, actual material progress was initially quite slow.

When the first MOA established the JNLWD in January 1997 at Quantico, Virginia, it had a staff of two Marine officers, one Air Force officer, a Marine lance

corporal, twelve civilians,[61] and a budget of $25 million.[62] Since then the JNLWD has maintained a modest $25 million annual budget.[63] This small directorate has had the formidable task of administering multi-service NLW coordination while competing just as every other activity within the DoD for acquisition funding.[64] Recently, the JNLWD's budget was augmented to approximately $29 million but even this is a fraction of the money needed. As a result, NLW advocates point to the JNLWD's limited funding as proof that the US continues to marginalize NLWs research and development.[65] However, determining the actual amount of money being applied to NLWs development is quite a bit more involved.

This next year, the JNLWD is expecting to get a 72 percent increase in budget, 25 percent of which is expected to be permanent.[66] In addition, the JNLWD is affiliated with other institutions such as the Pennsylvania State University's (Penn State) Applied Research Laboratory and the University of New Hampshire's Non-lethal Technology Innovation center.[67] Penn State's program in non-lethal technologies dates back to 1977, when the University first established the Institute for Non-Lethal Defense Technologies.[68] This institute coordinates various research projects among its colleges of medicine, health and human development, engineering, and earth and mineral sciences as well as its Institute for Policy Research, the Dickinson School of Law, and the Applied Research Laboratory.[69] The Penn State Applied Research Laboratory conducts $120 million worth of research in non-lethal technologies annually, primarily for the DoD.[70]

Furthermore, additional funding levels for NLWs research and development are more difficult to assess. Many of the programs involved with the development of advanced technologies that will contribute to NLWs advances originate in classified

programs and top-secret laboratories.[71] Although the JNLWD has a relatively small budget of its own, the amount of research dollars actually applied to technologies developed under special classified programs is difficult to assess until after the program is officially unveiled. Research and development of "weapons that fire lasers, electricity and sound-waves, have been in development for years."[72] The most recent and advanced NLW to become operational is the vehicle-mounted area denial system using area denial technology (ADT). The Air Force invested an estimated $40 million to bring the ADT to fruition.[73] The ADT focuses energy into a spotlight-like beam of radiowaves that causes an intense burning sensation akin to touching a hot light bulb.[74] The ADT example shows that, since the end of the Cold War, a multi-faceted and active community has evolved. However, the sudden shift from Cold War unrestricted warfare to more relevant MOOTW technologies, such as NLWs, may have resulted in a technology push lacking traditional, well-defined operational requirements and established doctrine.[75]

## Scope

The scope of the thesis is to compare the present status of NLW doctrinal development to 1999 when Lieutenant Colonel Joseph M. Perry completed his MMAS titled, "Joint Doctrine for Non-lethal Weapons." In order to do this, the thesis will study the development of US Army doctrine to define the elements of existing doctrine.

The Marine Corps has completed its first revision of the *Multi-service Procedures for the Tactical Employment of Non-lethal Weapons* (MCWP 3-15.8, FM 3-22.40, NTTP 3-07.3.2, AFTTP(I) 3-2.45, USCG Pub 3-07.31). The Army is also updating its *Concept for Non-lethal Capabilities in Army Operations* (TRADOC Pam 525-73), that is the US Army's conceptual source of NLW doctrine. By reviewing each service's NLW doctrinal

publications as well as each service's DTLOMS equivalents, it is possible to form the fundamental requirements of NLW doctrine.

LtCol Joseph Perry's thesis advocated several requirements of a joint NLWs doctrine. The first requirement of joint doctrine is to provide guidance for operations involving two or more services.[76] More importantly, joint doctrine should provide guidance when military force by itself may not meet the National Command Authorities' (NCA) expectations.[77] Furthermore, joint doctrine standardizes training and sets the framework for maintaining consistency as one US force replaces another. Given the complex political-military interactions of PSOs, the need to coordinate with coalition units, non-government organizations (NGOs), political advisors, and other organizations may be extensive to maintain consistent policies between the force and the local population. A joint NLW doctrine should also address the use of lethal force for PSOs. Examples of areas that NLWs policy coordination are required include intelligence, NLW command and control, NLW information operations, non-combatant considerations, logistics, engineering support, and training.

Of all the services, the Marine Corps and Army have been the most active in implementation of NLW capabilities. The *Multi-service Procedures for the Tactical Employment of Non-lethal Weapons* primarily concentrates on tactical procedures for employment and service-wide standardization of training. TRADOC Pam 525-73, however, amplifies the general policies of DoD Directive 3000.3 and begins to describe NLW capabilities supporting the entire range of military operations at all levels of war. The Pamphlet not only addresses riot and mob control, it also addresses the use of NLW role in sanctions, resource interdiction, conflict intervention, MOUT, and large-scale

operations. An initial search of Joint DOTMLPF (doctrine, organization, training, material, leadership, personnel, and facility) indicates the existence of recent exploration and experimentation with NLWs above the tactical level from joint commands as well as the services. Thus, current service documents provide the framework for the development of NLW doctrine above the tactical level despite the absence of an official joint NLW doctrinal publication.

## Assumptions

This study is based on three key assumptions. The first assumption is that DoDD 3000.3 represents executive direction to integrate and conditionally use NLWs as a warfighting instrument to accomplish national and military strategic goals. Accordingly, this study shall not examine the US Government's decision to employ NLWs. The second assumption is that one of the DoDD 3000.3's intents was to establish operational and strategic level doctrine. DoDD 3000.3 specifically requires that commanders of the Unified Combatant Commands shall "ensure that procedures exist for the integration of NLWs into operational mission planning."[78] The third assumption is that the military's development of NLW capability sets as directed in DoDD 3000.3, are in accordance with both international law and the law of war (Appendix A refers).

## Definitions

This study defines the below key terms as follows:

Collateral Damage: Unavoidable and unplanned damage to civilian personnel and property incurred while attacking a military objective.[79]

Counter Personnel Capabilities: Non-lethal counter personnel capabilities allow the application of military force to accomplish a mission with reduced risk of fatalities or

serious casualties among noncombatants- or even, in some instances, among enemy forces.[80]

Counter Materiel Capabilities: Non-lethal counter materiel capabilities would enhance U.S. operations by reducing or eliminating the enemy's ability to use his equipment.[81]

Deterrence: The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction.[82]

Doctrine: Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.[83]

Joint Doctrine: Fundamental principles that guide the employment of forces of two or more military departments in coordinated action toward a common objective. It is authoritative; as such, joint doctrine will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. It will be promulgated by or for the Chairman of the Joint Chiefs of Staff, in coordination with the combatant commands and services.[84]

Multi-Service Doctrine: Fundamental principles that guide the employment of forces of two or more services in coordinated action toward a common objective. Ratified by two or more services, it is promulgated in multi-service publications that identify the participating services.[85]

Non-lethal: Not made to cause death; not intentionally deadly; a term used broadly to describe capabilities that affect targets, temporarily or permanently, without

intentionally causing death to personnel or without unnecessary destruction or environmental damage.[86]

Non-lethal capabilities: Capabilities employed with the intent to compel or deter adversaries by acting on human capabilities or materiel while minimizing killing and destruction of equipment or facilities.[87]

Non-lethal weapons: Weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment. Unlike conventional lethal weapons that destroy their targets through blast, penetration, and fragmentation, NLWs employ means other than gross physical destruction to prevent the target from functioning. NLWs are intended to have one, or both, of the following characteristics: (1) NLWs have relatively reversible effects on personnel or materiel. (2) NLWs affect objects differently within their area of influence.[88]

## Limitations

Research has been limited to unclassified sources. Although some "For Official Use Only" sources were reviewed, only information existing in unclassified sources were cited.

## Delimitations

The legal ramifications involved with NLWs use is not specifically addressed in this thesis. However, the legal considerations are, perhaps, the most controversial aspect of NLWs. In, "Non-Lethal Weapons: Legal Issues," W. Hays Parks, Special Assistant to the Judge Advocate General of the Army, offers a concise overview of the multi-faceted and complex legal issues in Appendix A. This study addresses the NLW technologies in

general and broad categories such as directed energy weapons, anti-traction material, maloderants, projectiles, webs and nets, ray guns, drugs and biologics. No attempt is made to present the specifics with respect to each of the NLWs technologies. However, the Committee for an *Assessment of Non-Lethal Weapons Science and Technology* conducted a survey and assessment of NLWs technologies and was consolidated into Appendix B of their study. Appendix B of an *Assessment of Non-Lethal Weapons Science and Technology* currently represents the most up to date listing of NLWs technologies and the applicable missions for each NLWs technology.

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[1]Lieutenant Colonel Margaret-Anne Coppernoll, "The Non-lethal Weapons Debate," *Naval War College Review*, Vol. 52, no. 2 (Spring 1999), 2.

[2]Ibid., 2.

[3]John B. Alexander, *Future War: Non-Lethal Weapons in 21st Century Warfare*, (New York: St. Martin's Press, 1999), 33.

[4]Ibid., 43.

[5]Barton Reppert, "Force Without Fatalities," *Government Executive*, Vol. 33, no. 6 (May 2001), 1.

[6]Center for Strategic and International Studies (CSIS), "Non-Lethal Weapons Policy Study," (Washington DC: CSIS, 5 February 1999), 17.

[7]Steven Metz, "Non-Lethal Weapons, A Progress Report," *Joint Forces Quarterly*, Spring/Summer (2001), 21.

[8]Chairman of the Joint Chiefs of Staff, *Handbook for Joint Urban Operations*, Primer for future Joint Pub 3-06, (May 2000), I-4.

[9]International Defense Review, June 1, 1998, cited in Center for Strategic and International Studies (CSIS), "Non-Lethal Weapons Policy Study," 13.

[10] Joint Non-Lethal Weapons Directorate (JNLWD), *Joint Concept for Non-Lethal Weapons*, (05 January 1998), 3.

[11]Gerrard Quille, "The Revolution in Military Affairs Debate and Non-Lethal Weapons," *The Future of Non-Lethal Weapons*, (Portland, OR: Frank Cass Publishers, 2002), 48.

[12]*Handbook for Joint Urban Operations*, 17 May 2000

[13]John B. Alexander, *Future War*, 175.

[14]Chairman of the Joint Chiefs of Staff (CJCS), *Handbook for Joint Urban Operations*, Primer for future Joint Pub 3-06, (May 2000), 1.

[15]Russell W. Glenn, . . . *We Band of Brothers* (Santa Monica, CA: RAND-Arroyo, 1999), 8.

[16]John B. Alexander, *Future War*, 14.

[17]CSIS, "Non-Lethal Weapons Policy Study," 13.

[18]JNLWD, *Joint Concept for Non-Lethal Weapons*, 3.

[19]CSIS, "Non-Lethal Weapons Policy Study," 13

[20]John F. Guilmartin, Jr., *Technology and Strategy: What are the Limits?*, Strategic Studies Institute's Fifth Annual Conference on Strategy (Carlisle Barracks, PA: US Army War College, April 1994), 37.

[21]Coerr, Stanton S., "For Those in Harms Way," US Naval Institute, *Proceedings* (Apr 2002), 2.

[22]Steven Metz, "Non-Lethal Weapons, A Progress Report," 21

[23]William J. Bayles, "The Ethics of Computer Network Attack," *Parameters*, US Army War College Quarterly (Spring 2001), 3.

[24]Ibid., 3.

[25]JNLWD, *Joint Concept for Non-Lethal Weapons*, 3

[26]John B. Alexander, *Future War*, 6.

[27]Department of the Army (DOA) White Paper, "Concepts for the Objective Force," iv.

[28]Ibid., 1.

[29]Ibid.

[30]Department of the Army (DOA), *Infantry Branch Concept for Tactical Non-lethal Capabilities*, (Fort Benning, GA: Headquarters, U.S. Army Infantry Center, 27 April 1998), 2.

[31]Ibid.

[32]Ibid.

[33]The White House, "National Security Strategy," (October 1998), as quoted in CSIS, "Non-Lethal Weapons Policy Study," 14.

[34]John B. Alexander, *Future War*, 41.

[35]Ibid., 33.

[36]Lieutenant General E. R. Bedard, US Marine Corps, "Nonlethal Capabilities: Realizing the Opportunities," *Defense Horizons*, no. 9 (March 2002), 4.

[37]Lieutenant Colonel Joseph M.Perry, "Joint Doctrine for Non-lethal Weapons," MMAS thesis (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1999), 68.

[38]Russell W. Glenn, . . . *We Band of Brothers*, 17.

[39]Lieutenant Colonel Charles R. Rice, "An Analysis of the Strategic Application of Non-lethal Weapons to Provide Force Protection," Strategy research project (Carlisle Barracks, PA: U.S. Army War College, 2001), 2.

[40]Ibid.

[41]Ibid.

[42]Barton Reppert, "Force Without Fatalities," 2.

[43]Douglas C.Lovelace Jr., and Steven Metz, "Non-lethality and American Land Power: Strategic Context and Operational Concepts," (Carlisle, PA: U.S. Army War College, Strategic Studies Institute, 15 June 1998), 2.

[44]Ibid.

[45]TRADOC Annual Command History-1994, "Non-lethal Operations," Chapter 4, 16.

[46]Lovelace & Metz, "Non-lethality and American Land Power," 2.

[47]Columbia TriStar Pictures, "Black Hawk Down," 2001, directed by Ridley Scott, based on the book by Mark Bowden, *Black Hawk Down: A Story of Modern War*, (New York: Atlantic Monthly Press, 1999).

[48]Coppernoll, "The NLWs Debate," 2.

[49]Ibid.

[50]Ibid.

[51]Coerr, "For Those in Harm's Way," 2.

[52]Department of Defense. Department of Defense Directive (DoDD) 3000.3, *Policy for Non-lethal Weapons* (9 July, 1996), 2.

[53]Ibid., 3.

[54]Ibid.

[55]Ibid.

[56]Joint Non-Lethal Weapons Directorate (JNLWD), *Joint Non-Lethal Weapons Program Master Plan* (June 2000), 2.

[57]Ibid.

[58]Metz, "NLW Progress Report," 19.

[59]JNLWP *Master plan*, 2.

[60]North Atlantic Treaty Organization (NATO), "NATO Policy on Non-Lethal Weapons," Section III, Para 4. (13 October 1999), 3.

[61]Barton Reppert, "Force without Fatalities," 3.

[62]Naval Studies Board (NSB), *An Assessment of Non-Lethal Weapons Science and Technology*, (Washington DC: National Academies Press, National Academy of Sciences, 2003), ix.

[63]Coerr, "For Those in Harm's Way," 2.

[64]Barton Reppert, "Force without Fatalities," 3.

[65]Coerr, "For Those in Harm's Way," 3.

[66]Phone conversation with US Navy Commander Jay Bottleson at JNLWD, 14 Feb 2003.

[67]Metz, "NLW Progress Report," 21.

[68]Dennis B. Herbert, "Non-Lethal Weaponry: From Tactical to Strategic Applications," *Joint Forces Quarterly*, no. 21 (Spring 1999), 5.

[69]Ibid.

[70]Pamela Hess, "US: 'Non-lethal' Weapons Being Developed," *The Washington Times*, (31 October 2002), 1.

[71]Douglas Pasternak, "A Softer Touch," *U.S. News and World Report* (11 November 2002), 1.

[72]C. Mark Brinkley, "Pentagon to Announce Landmark NLW," *Air Force Times* vol. 61, no. 32 (5 March 2001), 4.

[73]Peter Clark, "Millimeter-Wave Energy to be Used in a Weapon," *Electronic Engineering Times*, no. 1170 (11 June 2001), 26.

[74]Brinkley, "Pentagon to Announce Landmark NLW," 4.

[75]Colonel Joseph Siniscalchi, US Air Force, "Non-lethal Technologies: Implications for Military Strategy," Research report (Maxwell Air Force Base, AL: Air War College, Air University, 1997), 5, cited: Charles Swett, "Strategic Assessment: Non-lethal Weapons, Office of the Assistant Secretary of Defense for Special Operations and Low-intensity Conflict Staff Paper, November 1993, 4-6, Colonel John Barry; Lieutenant Colonel (Lt Col) Michael Everett; and Lt Col Allen Peck, "Nonlethal Military Means: New Leverage for a New Era," National Security Program Policy Analysis Paper 94-01, John F. Kennedy School of Government, Harvard University, 1994, 9.

[76]Chairman of the Joint Chiefs of Staff (CJCS), Joint Publication (Joint Pub)1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: U.S. Government Printing Office, 12 April 2001), 221.

[77]Perry, "Joint Doctrine for NLWs," 79.

[78]DoDD 3000.3, 4.

[79]The 1977 Protocols Additional to the Geneva Conventions, December 12, 1977, Article 51, 116 I.L.M. 1391, DA Pam 27-1-1.

[80]JNLWD, *Joint Concept for Non-Lethal Weapons*, 9.

[81]Ibid.

[82]CJCS, Joint Pub 1-02, 125.

[83]Ibid., 132.

[84]Ibid., 221.

[85]Ibid., 283.

[86]Department of the Army (DOA), Training and Doctrine Command (TRADOC) Pamphlet 525-73, *Concept for Non-lethal Capabilities in Army Operations*, Change 1, Fort Monroe, VA: TRADOC (1 December 1996), 12.

[87]DOA, TRADOC Pam 525-73, 12.

[88]DoDD 3000.3, 2.

# CHAPTER 2

# LITERATURE REVIEW

A review of the professional literature concerning NLW sources at Combined Arms Research Library (CARL) included Google, Google Uncle Sam, Proquest Direct, and Jane's. The review provided access to current NLW references discussing current and proposed NLW technologies, strategic implications of NLW technologies, and recent peace operations' lessons learned. The on-line and 2002 CD-rom Joint Electronic Library also provided ready access to joint doctrine information. Other databases accessed were the Center for Army Lessons Learned (CALL) and United States Naval Institute (USNI).

The DoDD 3000.3, "Policy for Non-lethal Weapons," provides the official U.S. government's policies with respect to NLW as established in 1996. In light of DoDD 3000.3, Douglas C. Lovelace Jr. and Dr. Steven Metz, professors at the Army War College, describe the military and political events leading to the creation of the "Policy for Non-lethal Weapons in Non-lethality and American Land Power." Lovelace and Metz's research presents arguments for and against the use of NLW while avoiding specific doctrinal or procedural recommendations. Instead, their research focuses on three core issues: (1) The growing interest in non-lethality among American strategists and policymakers; (2) The implications of the United States fully adopting non-lethal operational concepts; And (3), the likely form that the US Government's adopted non-lethal operational concepts would be.[1] Additionally, the two most recent DoD non-lethal weapons program memoranda of agreement[2] provide a direct comparison of the Joint Non-lethal Weapons Program's charter documents with respect to doctrine development.

Another key source is the Joint Non-lethal Weapons Program (JNLWP) Master Plan June 2000, which provides a clear idea of the direction the JNLWP plans on taking the NLW program from a doctrinal perspective.

A doctoral dissertation by Dennis S. Driggers titled, "The United States Army's Long March from Saigon to Baghdad: The Development of Warfighting Doctrine in the Post-Vietnam Era," introduces the concept of tactical, operational and strategic doctrine. Although specific to the US Army, the work lays out a methodology for comparing doctrine and its development based on historic analysis from post-Vietnam to the early 1990s. Mr. Driggers observes that in at least one case, doctrine was more driven by capabilities rather than conceptual application.[3] However, by analyzing the Army's tactical doctrine, Mr.Driggers shows that recent Army tactical doctrine has characteristically shaped the development of technology in support of its AirLand Battle concept.[4]

There are surprisingly few military publications dedicated to the topic of NLWs compared to other means of warfare. One significant source is the updated January 2003 version of the *Multi-service Procedures for the Tactical Employment of Non-lethal Weapons* that updates the October 1998 version. This reference provides a detailed look at NLW training standards and tactical procedures for the employment of NLWs. Another resource is the draft US Army's TRADOC Pamphlet 525-3-23.40, *Concept for Non-lethal Capabilities in Army Operations* that will update the 1996 version. TRADOC Pamphlet 525-3-23.40 provides a description of the various memoranda and treaties that affect NLW development and outlines the NLWs integration into the Army's transformation to the Objective force[5]

There are several published scholarly books that address the wide range of NLW technology and issues. John B. Alexander, a retired US Army Colonel and one of the most ardent supporters of non-lethal weapons, wrote *Future War*[6] that explores the role of NLWs in the next century. In *Future War*, Mr. Alexander states that,

> the high degree of instability at flash points around the world has a direct bearing on the development and deployment of non-lethal weapons. It seems clear that use of force will be required to resolve, however temporarily, disputes in many areas. Peace support operations and humanitarian missions are likely to increase.[7]

Another book by Nick Lewer and Steven Schofield, *Non-Lethal Weapons: A Fatal Attraction?*[8], expresses concern about the development and misuse of non-lethal weapons. They write, "an obvious danger is that civil security becomes increasingly militarized as the police deploy a sophisticated array of weapons and use military-style tactics and operational behavior."[9] Nick Lewer also edited a more recent book, *The Future of Non-Lethal Weapons Technologies, Operations, Ethics and Law*,[10] which is a compilation of articles that first appeared in *Medicine, Conflict and Survival*,[11] *Peace and Change*,[12] and *Defense Studies*.[13] The book is a well-rounded collection of advocacy and caution with respect to the development of NLW technologies.

In addition to this published material, two recent, unpublished Command and General Staff College Master of Military Art and Science theses have also addressed NLWs. In 1995, Major Stephen Pope of the Canadian Forces, in a thesis entitled "Non-lethality and Peace Operations," concluded that NLWs provided significant benefits with respect to peacekeeping missions. Also, Lieutenant Colonel Joseph M. Perry, USMC, in a thesis entitled "Joint Doctrine for Non-lethal Weapons"(1999), predicted that by 2003 the armed forces would possess significantly enhanced NLW operational capability and that

the development of joint doctrine was critical before 2003. An unpublished report by Joseph Coates entitled, "Non-Lethal and Nondestructive Combat in Cities Overseas," dating back to May 1970, turned up after searching the DTIC (Defense Technical Information Center) database. Although dated, it provides valuable background concerning the history of the complex security environment along with an uncanny assessment of the role of non-lethal capabilities today.

There are also a core of major studies and conferences that have occurred since 1996, and which are referenced frequently throughout nearly all of the above described references and materials. These study and conference findings are listed with a short synopsis of each in Appendix C.

Finally, there are documents associated with or produced by the JNLWD, including the DoD NLW Program Memoranda of Agreement (1997, June 1999, May 2002) and the JNLWD Master Plan (June 2000) discussed previously.

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[1]Lovelace & Metz, "Non-lethality and American Land Power," 5.

[2]MOAs dated 23 Jun 1999 and 10 May 2002.

[3]Dennis Steward Driggers, *The United States Army's Long March from Saigon to Baghdad: The Development of War-Fighting Doctrine in the Post-Vietnam Era* Doctoral dissertation (Syracuse, NY: Syracuse University, Maxwell School of Citizenship and Public Affairs, May 1995), 35.

[4]Ibid., 88.

[5]Department of the Army, Coordinating Draft Training and Doctrine Command (TRADOC) Pamphlet 525-3-23.40, *Concept for Non-lethal Capabilities in Army Operations*, Version 1.1 (Fort Monroe, VA: TRADOC, 15 March 2003), 3.

[6]Alexander, *Future War* (St. Martin's Press,1999).

[7]Barton Reppert, “Force without Fatalities,” 1.

[8]Nick Lewer and Steven Schofield, *Non-Lethal Weapons: A Fatal Attraction?* (Zed Books, 1997).

[9]Barton Reppert, “Force without Fatalities,” 3.

[10]Nick Lewer, ed., *The Future of Non-Lethal Weapons Technologies, Operations, Ethics and Law* (Frank Cass, 2002).

[11]*Medicine, Conflict and Survival*, Vol.17 no.3 (July-Sept. 2001).

[12]*Peace and Change,* Vol. 26 no.1 (2001).

[13]*Defense Studies,* Vol. 1 no.2 (2001).

# CHAPTER 3

## RESEARCH METHODOLOGY

In order to determine if service publications or DTLOMS exist that provide the US Government's or services' policies and goals of its application of NLWs, an exploratory and comparative study will be conducted. This study will describe the development of traditional doctrine. The study will compare and contrast key JNLWP, service and joint documents, as well as NLW studies prior to 1999 with more recent NLW-related documents. This direct comparison will provide insights into how the NLWs program is maturing and characterize its growth by answering the secondary questions. As with most qualitative studies, a major portion of this research will rely heavily on the researcher's analysis of the pre-1999 and post-1999 documents. The conclusions from Lieutenant Colonel Perry's analysis of the state of NLWs prior to 1999 will be used as a reference point from which to determine the relative progress of NLWs doctrinal developments since 1999.

The study will be done in seven parts. The exploratory portion will be done in four parts addressing the traditional roles of military doctrine with respect to national policy and interests, joint doctrine, the political and military challenges of the environment associated with PSOs, and NLWs applicability to operational and strategic level doctrine with respect to MOOTW/PSOs. Then, the comparative portion will be done in three parts addressing changes that have occurred since 1999. The three areas addressed are service documents and each service's implementation of NLWs programs, each service's forward-looking documents that address the incorporation of NLWs into

the a service's future force structure, as well as evaluating each service's implementation and exploration at the various doctrinal levels (tactical, operational, and strategic).

In examining the roles of doctrine it is imperative to establish the link between doctrine and a state's national interest's to its military strategy and its military's materiel and force structure. Analysis of the interrelationship of doctrine and strategy reveals the traditional factors that shape the US military's doctrinal development and is therefore applicable to each service component of the US military in broad terms. Thus, an in-depth evaluation of one service's doctrinal development, considering these traditional factors, is also applicable to the other services in broad terms. An in-depth evaluation of the US Army's doctrinal development is used to illustrate how the traditional factors effected the tactical, operational, and strategic doctrinal development of the US Army in the post-Vietnam era, as well as doctrine's role in shaping future technologies. In the end, this line of analysis illustrates that one of the traditional roles that military doctrine has had is in guiding materiel and technological development while adapting to meet the threat in the future operational environment. Once a basic understanding of the roles of doctrine has been established, a review of joint doctrine with respect to its implementation of NLWs provides insights into any progress on NLWs doctrine in the joint publications.

The second part of the study focuses on joint doctrine and understanding its role in the development of joint warfighting doctrine. Apart from establishing some background information on the origin of joint publications, the evaluation addresses directly the relevant joint publications and analyzes them. The analysis extends to relevant studies and reports that address NLWs in the joint forum. Upon completion of

the review of this literature, the study assesses the extent which NLWs are incorporated into these joint publications and characterizes their presentation. Finally, the study will assess the status of NLWs in current doctrine and assess the likelihood of the appearance of a stand-alone joint publication of NLWs at some point in time. Once this task is completed, the focus of the study shifts to analyzing the complex security environment discussed in Chapter 1, "Nature of the Problem" and for which a joint publication does exist, namely Joint Pub 3-07, *Joint Doctrine for Military Operations Other Than War*.

The third portion of the exploratory study will focus on the current MOOTW environment and the possible role/roles of NLWs. The information presented in the Chapter 1 describes the relatively recent symptoms of this complex security environment. This portion of the analysis, however, focuses on how the military views MOOTW as well as analyzes the recent history of this complex security environment by comparing studies addressing the use of non-lethal technology in an urban environment. This will accomplish three things. First this section describes the range of conflict intensity potentially associated with MOOTW, in particular PSOs, relative to the spectrum of military operations (show-the-flag through major-theater-war). Second, past studies regarding NL technologies in complex security environments are compared with recent studies in order to determine the degree in which the complex security environment has changed. Lastly this section determines the applicability of NLWs to MOOTW in light of advances in precision-munitions and high technology. This portion of the analysis determines if there is a need for NLW capabilities that expand military options when conducting MOOTW in a complex security environment. It then becomes necessary to investigate the possible roles of NLWs at the operational and strategic levels of war.

The last portion of this analysis determines if NLWs are applicable to operational and strategic level doctrine by attempting to link the NLW capabilities that expand military options to expressions of US strategic or operational level doctrine. Further analysis is required to determine if these NLW capabilities that expand military options are unique to NLWs. Demonstrating that NLWs apply to operational and strategic doctrine as well as contribute unique capabilities would support the conclusion that NLWs should be an integral capability of a military service operating in a complex security environment. The next step is to determine the extent that NLWs doctrine is incorporated into the services and other expressions of joint doctrine in the comparative portion of the study.

The comparative portion of the study will be done in three parts addressing the service NLWs TTP and training, forward-looking vision documents such as NLW service DTLOMS along with joint DOTMLPF, and the criteria used to evaluate the progress made by each service with respect to their respective NLWs programs.

The first part of the comparative study describes the differences between the various field manuals, TTPs, and warfare publications regarding each service's implementation of NLWs since 1999. The goal is to characterize differences as contributing to NLW doctrine above the tactical level or not, by direct comparison of field manuals, TTPs, and warfare publications originally published up through 1998 with revisions completed after 1999. Again, any studies or reports that address the services' implementation of NLWs would also provide another point of view for consideration. Another source of information is the US Marine Corps' Interservice Non-Lethal Individual Weapons Instructor Course (INIWIC) and the US Army's Military Police

(MP) School, colocated at Fort Leonard Wood, Missouri. Interviews with instructors and the Officers in Charge (OIC) are valuable sources of the realities of the NLWs programs that are implemented. Their inputs are doubly valuable since they promulgate the official core curriculum that has been approved for the service schools to teach. Thus, inputs from the sanctioned NLWs schools will ultimately allow characterization of the level of NLWs doctrine in the current NLWs programs. This portion is rooted in the present with the conceptual thoughts concerning the future use of NLWs explored in the next section.

White papers, service DTLOMS and joint DOTMLPF and other vision or concept papers are forward-looking documents that attempt to assess the impact of incorporating change to the military. This portion of the study involves a search for and review of DTLOMS/DOTMLPF and service publications in order to evaluate current and future policies and concepts of employment as tactical, operational, or strategic. Furthermore, it encompasses reviewing each service's "Vision 2020" equivalent for references to the use or development of NLWs, finding and evaluating any service studies or exercises conducted to evaluate NLWs, as well as finding and evaluating any other expressions of service requirements for NLWs such as mission needs statements.

The last portion of the comparative study is the evaluation of which service provides the greatest degree of NLW tactical, operational and strategic concepts by summarizing the information obtained in the preceding sections for each service's implementation and exploration at the various doctrinal levels (tactical, operational, and strategic). Since the amount of progress made in any particular category is relative, the scale will be the associated level of doctrine and a numerical placement relative to the where they stand in relation to the other services.

The last and final step of the research methodology will be to consider the results of the analysis conducted in the exploratory and comparative studies and determine if service publications, such as DTLOMS, exist which provide the US Government's or services' policies and goals of its application of NLWs. In doing this, the research methodology is designed to answer the primary as well as the secondary questions.

# CHAPTER 4

# ANALYSIS

This chapter reviews the research conducted regarding service publications that relate to NLWs and analyzes the degree to which said publications provide adequate guidance for the employment of NLWs in the current complex security environment. This effort begins with a review of the traditional development of modern warfighting doctrine.

## The Development of Modern Warfighting Doctrine

The traditional development of modern warfighting doctrine demonstrates the links between the nation's interests, its military strategy, and doctrine. National interests refer to a nation-state's core or vital interests, and represent broad political categories such as survival and security, political and territorial integrity, economic wellbeing, and stability.[1] Military strategy addresses the ways and means that the military power can be applied to achieve political ends using military doctrine.[2]

Within the military, doctrine is used in three different senses.

> At the highest, most inclusive level it is used as a synonym for national strategic policy (e.g., the Nixon Doctrine). At a lower, less inclusive level it describes a broad operational category of military endeavors (e.g., Low-Intensity Conflict Doctrine). It is used in still a narrower sense to describe some applications of military techniques (e.g., AirLand Battle Doctrine).[3]

Although the AirLand Battle Doctrine example is service specific, the factors that help to shape doctrine in one service can be applied in broad conceptual terms to the other services. The ability to apply broad conceptual factors is primarily due to the fact that the services seem generally to agree on the role of doctrine.

> Army: Doctrine provides a military organization with a common philosophy, a common language, a common purpose, and unity of effort.
>
> Air Force: At the very heart of war lies doctrine. It represents the central beliefs for waging war in order to achieve victory. . . . It is the building material for strategy. It is fundamental to sound judgment.
>
> Navy: Doctrine is every action contributing to unity of purpose . . . It is what warriors believe in and act upon.
>
> Marines: Doctrine establishes a particular way of thinking about war and a way of fighting. . . . Doctrine provides the basis for harmonious actions and mutual understanding.[4]

As a result of the general agreement on the role of doctrine, the primary purposes of doctrine observed in the services are also similar.

There are four primary purposes of doctrine:[5] First, doctrine establishes guidelines or suggests methods that would work best. Second, doctrine facilitates communication between individuals by defining terms and outlining tactical concepts that enable the various units on the battlefield to act in a coherent manner. Third, doctrine assists in the development of organizations and weapons systems. Finally, doctrine provides a core curriculum since it has official approval to be taught at service schools.[6] Given the similar role of doctrine within the services, analysis of the external factors influencing the Army's doctrine would also provide insights into the other services.

A 1995 Doctoral dissertation from the University of Michigan by Dennis Stewart Driggers analyses the recent developments of US Army doctrine. The dissertation was entitled, "The United States Army's Long March from Saigon to Baghdad: The Development of War-fighting Doctrine in the Post-Vietnam Era." Dr. Driggers conducted a historical survey to examine the US Army's post-Vietnam tactical war-fighting doctrines and some of the internal and external factors partially responsible for shaping

Army operational and strategic doctrine from 1973 to 1993. The author analyzes successive editions of Field Manual 100-5, Operations (FM 100-5) in 1976, 1982, 1986 and 1993, in order to explore the various causal elements that shaped the evolution of the Army's Post-Vietnam doctrine.[7] However, Dr. Driggers' analysis of Army doctrine included a short analysis of the factor that, in general, contribute to doctrinal changes in a service.

Dr. Driggers concluded that there are at least five external factors that explain changes in a service's fighting doctrine in the post-Vietnam era: (1) the threat, (2) national strategy, (3) failure in Vietnam (resulting in civilian intervention), (4) emerging military technology, and (5) resources.[8] In the 1980s, the Soviet threat caused the services to adopt a strategy which look to future technologies to provide the force multipliers needed to defeat a massive Soviet theater offensive on land, at sea, and from the air.[9,10] The Soviet threat did not by itself provoke the 1982 edition of Field Manual 100-5. However, the 1982 edition of Field Manual 100-5 and the subsequent 1986 and 1993 editions were all designed to guide the Army's future materiel development and to ease integration of Deep Battle high-technologies into the force structure.[11]

> For the Army to independently fight a deep battle required considerable modernization (e.g., real time intelligence, better all-weather sensors and automation to integrate data, and long-range, conventional missiles producing near-nuclear effects.) . . . However, none of the required technologies were available before the mid to late 1990's.[12]

Thus, the required Deep Battle technologies referred to in the above quotation included several systems that were not in existence when the Army proposed its AirLand Battle doctrine. Examples of the still-to-be-developed Deep Battle technologies included: An All-Source Analysis System (providing automated fusion of intelligence);[13] A tactical

satellite and the Army Tactical Missile System;[14] The Multiple-Launch Rocket System (MLRS) terminally guided munitions;[15] As well as the Long-bow radar system for attack helicopters.[16] Another trend that started with the 1982 edition of FM 100-5 was the introduction of the operational level of war into the Army's tactical doctrine,[17] primarily focused at the Corps battle space.[18]

The use of doctrine to shape future materiel development is not a new trend. Of several examples in just the modern era alone, two historical doctrinal developments that shaped the future materiel developments can be seen in the other services. The US Navy and Marine Corps's amphibious operations were conceptualized in doctrine, during the 1930s, and then the required beaching ships and landing craft were developed.[19] An airpower doctrine proposing strategic bombardment by classical air power visionaries such as Douhet, Trenchard, and Mitchell, shaped the materiel development of what is still a symbol of strategic air power, the long-range bomber.[20] Similar to the materiel shaping role of Army doctrine in the 1980s, the US Navy and US Air Force doctrine of the 1980s also shaped future technologies. The US Navy realized the creation of the Aegis air defense system with sea and land attack cruise missiles (Harpoon and Tomahawk respectively). The US Air Force realized stealth technology and the Global Positioning System (GPS), the basis for unparalleled precision strikes.

In broad terms, each of the services' strategic, operational, and tactical doctrine not only serves to guide the conduct of military operations in support of national objectives, but guides future material development, especially high technology. With the

links between a nation's interests, its military strategy, and the role of doctrine established, the role of joint doctrine and its development of NLWs doctrine is analyzed next.

## Evaluation of Joint Doctrine

In general, the purpose of joint doctrine is to coordinate the combat capabilities of the services and allies or coalition partners to achieve the greatest possible advantage.[21] Prior to 1986, no single agency or organization had overall responsibility to develop joint doctrine and ensure consistency between existing service, multi-service, and combined doctrine.[22] Directives resulting from the Goldwater-Nichols DoD Reorganization Act of 1986 placed this responsibility with the Chairman of the Joint Chiefs of Staff, and resulted in the creation of joint publications (JPs) which have since serve as the baseline for service doctrine.

Since the basis of this study is a compare the criteria established in LtCol Perry's thesis, the following definitions and purposes of joint doctrine are the same. Joint doctrine is defined in JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, as the "fundamental principles that guide the employment of forces of two or more services in coordinated action toward a common objective."[23] JP 1, *Joint Warfare of the Armed Forces of the United States*, states,

> Though neither policy nor strategy, joint doctrine deals with the fundamental issue of how best to employ the national military power to achieve strategic ends. As such it represents authoritative guidance for the joint employment of the Armed Forces. . . . Joint doctrine offers a common perspective from which to plan and operate, and fundamentally shapes the way we think about and train for war.[24]

Lastly, JP 1-01, *Joint Publications System: Joint Doctrine and Joint Tactics, Techniques,*

*and Procedures Development Program*, states that the "purpose of joint doctrine and joint TTP is to enhance the combat effectiveness of US forces"[25] The purpose of joint doctrine as described above, clearly indicates the US Government's employment guidance of military power which includes the military's NLWs. Yet, joint doctrine continues to make only light references to NLWs.

A recent NLWs doctrinal summary from the Joint Warfighting Center Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities* (27 January 2003), concludes that, "several joint doctrine publications refer to the used of non-lethal means to attack targets."[26] An example of one of the larger references to NLWs can be seen in JP 3-09, *Doctrine for Joint Fire Support*:

> Nonlethal fires should be integrated into operations to produce synergistic results. Examples are EW, certain PSYOP, smoke operations, and some command and control warfare (C2W) operations which deceive the enemy, disable the enemy's C2 systems, and disrupt operations. The employment of nonlethal fires is especially important in military operations other than war (MOOTW) when restraint and limitations on the use of deadly force are necessary.[27]

The extent to which JPs address and discuss NLWs amount to little more than references to the use of non-lethal fires in addition to using lethal fires[28] with one exception, the new JP 3-06, *Doctrine for Joint Urban Operations* (16 Sep 2002). The Operational Lessons Learned section of Chapter One states, "non-lethal weapons and chemical control agents may have greater utility in urban operations [than previously thought]."[29] In addition, JP 3-06 defines NLWs in Appendix B and further states that,

> Non-lethal weapons can help commanders maintain the desired balance between force protection, mission accomplishment, and safety of noncombatants by expanding the number of options available when the use of deadly force poses problems. This type of situation most often occurs during MOOTW, although urban combat operations may also contain situations where non-lethal weapons are useful.

This characterization further demonstrates the link between MOOTW and urban combat operations due to the complexity of conducting military operation in these environments.

Since joint doctrine is written to describe operations with current capabilities, it would tend not to stray into the conceptual arena that NLW doctrine above the tactical level could represent.[30] Thus, the apparent route taken by the Chairman, Joint Chiefs of Staff, with respect to NLWs is to amplify our current doctrine[31] and incorporate NLWs as a planing consideration[32] when conducting MOOTW operations, such as PSOs.

## Understanding Peace Support Operations

MOOTW is often opaquely described as, "the use of armed forces for purposes other than war."[33] MOOTW includes various peacekeeping operations, legal intervention, humanitarian actions, as well as international police operations such as engaging international criminal organizations, combating terrorism, piracy, or illegal arms and drug trade.[34] According to the Joint Doctrine Encyclopedia, "MOOTW focus on deterring war, resolving conflict, promoting peace, and supporting civil authorities in response to domestic crises . . . MOOTW may involve elements of both combat and noncombat operations in peacetime, conflict, and war situations."[35]

Perhaps a clearer understanding of MOOTW can be accomplished by noting how it differs from traditional war:

> Unlike 'classic' warfare, these operations do not have as their goal the seizure or occupation of an enemy's territory, or the destruction of his political, economic or military-economic structures, or, in most cases, the defeat of an opposing side's armed forces. With rare exception these operations are not carried out against states, but rather against forces, organizations or movements which lack state status or structures. In the great majority of cases, such operations pursue limited goals that have already been strictly defined before an operation

> begins. Many such operations are conducted through the joint efforts of several states and at the mandate of international organizations.[36]

Perhaps the most striking theme in these descriptions of MOOTW is the primacy of what is often an international, multifaceted policy goal in which limiting non-combatant casualties and damage to infrastructure come to the fore.[37] The political primacy just described presents a formidable challenge for any nation conducting PSOs. Although the concepts and doctrine for PSOs are still emerging and still have no single, strictly verified and coordinated terminology.[38] There are three groups of PSOs.[39]

(1) Operations to Preserve Peace: "Employs primarily non-force methods of armed forces actions (such as observing and various forms of monitoring) in order to fortify political and diplomatic efforts to halt and settle a conflict, or respond to a crisis."[40]

(2) Peacekeeping: "Combines political methods with active operations by an armed peacekeeping force that does not, however, conduct any combat operations."[41]

(3) Peacemaking: "Involves the use of force, including combat actions, to compel peace, in concert with political efforts, or even without them."[42]

Underlying all of these PSOs is the goal of peace-building which represents the aggregate of actions and measures taken to restore social and political institutions that underpin a stable government and at a minimum, a subsistence economy.[43] The fact that doctrine for PSOs is still emerging is not indicative of a completely new complex security environment. Joseph Coates addressed the same complex security environment more than two decades ago. It appears to be quite relevant with regard to follow-on situations after recent campaigns that were part of Global War on Terrorism.

In his paper, "NonLethal and Nondestructive Combat in Cities Overseas", Joseph Coates analyzed the range of non-lethal firepower missions existing in 1970. In this report, he illustrates the wide dynamics involved when conducting PSOs which can also be used to show the changes brought about by the increasingly complex security environment. Joseph Coates did not specifically reference the US military's foray into Hue City in 1968. However, there has been a large body of documentation that is relevant to this study.

> Operation HUE CITY will long be remembered as an overwhelming American/ARVN victory over the best conventional forces the enemy could throw at us. . . . [However,] At the squad, platoon, and company levels, casualty rates were very severe, as high as 75 percent or more in some units.[44]

Hue City veterans Nicholas Warr and Scott Nelson recalled that one element that could have significantly improved the success of this operation included the employment of newly available chemical weapons (CS tear gas) for offensive operations during the early stages of the operation.[45] Warr and Scott recalled the effectiveness of the new NLW:

> CS gas had a dramatic effect on the enemy. The 1/5 Marines had advanced only four blocks at a cost of 50 percent casualties during the February 13-25 period of heavy fighting. (As the zone of attack was also four blocks wide, the marines thus took sixteen blocks in the two-week period.) . . . After an initial failed attempt, 1/5 marines successfully blanketed a several-block area with CS gas on February 25. They advanced the following morning and, without a single casualty, secured an additional twelve city blocks that had been abandoned by the NVA. Many hundreds of marines were saved through the use of this weapon."[46]

Comparing Joseph Coates' study with more contemporary studies and publications that evaluate military missions and tasks in today's complex security environment illustrates that the wide range of the intensity of conflict when conducting PSOs has remained virtually the same but in the background of the Cold War for many years. Furthermore, Joseph Coates' report demonstrates the applicability of NLWs to the

tactical missions that the US military must be prepared to deal with when conducting PSOs. During the Vietnam War, the doctrine of combat in cities or other urban areas came from Field Manual 31-50, *Combat in Fortified and Built-Up Areas* (March 1964) which advocated two courses of action: (1) If possible, avoid such combat. And (2) if such combat is necessary, proceed in a three-phase operation (isolate, gain a foothold, and systematically clear the area).[47] Although the combat doctrine in urban areas was rudimentary at the time, the same cues to today's complex security environment were already present. As Joseph Coats recognized in his report back in 1970,

> Future conflicts generally may have vague, uncertain, or shifting objectives. Consequently, a more intimate interplay of military and political goals, tactics, and implications than has been customary may prevail. There will be more intermingling of aggressors and civilians and greater blurring of the distinction between the two in many anticipated type of conflicts. This may be especially the case in urban combat. These points all argue for less profligate killing and less wanton destruction of property.[48]

Although the NLWs of the Vietnam War period were rudimentary, in many respects they are not all that different than the NLW capability sets available to military units today.[49] A table describing the range of military operations, firepower missions, and the applicability of NLWs is seen in Appendix B, along with a figure showing the wide range of conflict inherent in the conduct of PSOs in relation to the full range of conflicts. In his report, Joseph Coates concluded that NLWs had significant contributions in achieving the intended effects while using less lethal force across nearly all military missions and operations with the exception of show-of-force and blockade.[50] Although Joseph Coates' report is dated, many contemporary studies assess the utility of NLWs in a similar manner with the same results.

Comparable to Joseph Coates' evaluation of military missions, American Systems Corporation's (ASC's) "Joint Vision for Non-Lethals" (December, 1999), evaluates NLWs applicability with respect to the Universal Joint Task Lists (UJTLs) and service tasks, which are subsets of military operations. The group identified approximately 360 tasks in which NLWs were potentially applicable.[51] The report found that NLWs were applicable in three major areas: (1) Movement/Maneuver, (2) Forces/Fires, and (3) Force Protection.[52] ASC was also able to illustrate that these three tasks apply in every instance that would normally involve lethal force, and would therefore apply across the range of firepower missions. The report further concluded that in some cases, NLWs offered unique advantages and opportunities where lethal force was not appropriate.[53] While ASC was conducting this report, a parallel effort by the USMC and JNLWD was also underway.

Also in December of 1999, the Commandant of Marine Corps and the Joint Requirements Oversight Council (JROC) recognized and endorsed the need for a Joint Mission Area Analysis/Joint Mission Need Analysis (JMAA/JMNA) to support the Requirements Generation System (CJCSI 3170.A).[54] At a conference held on 23 December 1999, the Combatant Commanders (COMCOMs), Joint Forces Commanders, as well as the service forces they employ initially expressed their needs.[55] A final JMAA Conference was held 17-20 October 2000, with the results reported to the JROC in the second quarter of fiscal year 2001.[56] Using a strategy-to-task analysis, technologies were sorted by their potential application in over 100 mission areas and their perceived adaptability to delivery methods. Of the 45 potential technologies reviewed, joint and service force commanders identified 12 candidate technologies for development.[57] Once

the technology review was completed, these commanders could focus on developing NLWs requirements.

The joint and service force commanders translated operational needs into mission needs that resulted in three core requirements with eight associated functional areas:[58] Counter-personnel (incapacitate personnel, crowd control, clear facilities and area denial); Counter-material (area denial, disable/neutralize vehicles, aircraft, vessels and facilities); And counter-capability (disable or neutralize facilities and systems, and deny the use of WMDs).[59] The JMAA/JMNA report's conclusions were virtually the same as those found in ASC's study in recognizing the potential of NLWs across the spectrum of conflict and at all levels of war.[60] In particular, both the ASC and JMAA/JMNA reports cited the importance of the expanded capabilities offered by NLWs given the characteristics of MOOTW such as PSOs.

The wide range of potential conflict for the forces involved with MOOTW is not a new concept. The elements that are characteristic of the complex security environment were formally categorized back in the 1995, Joint Doctrine 3-07, *Military Operations Other Than War*:

> MOOTW may involve elements of both combat and noncombat operations in peacetime, conflict, and war situations. MOOTW involving combat, such as peace enforcement, may have many of the same characteristics of war, including active combat operations and employment of most combat capabilities.

However, the figure used to express MOOTW's wide range of potential conflict in today's terms has a striking conceptual resemblance to Joseph Coates' illustration of the wide dynamics involved when conducting PSOs in his study conducted in 1970. Thus, with the end of the Cold War, the factors discussed earlier in the nature of the problem

have resurfaced with the same potential intensity of conflict exiting today, despite the advances in precision weapons systems and other high technology. The expanded capabilities offered by NLWs have maintained their applicability in a PSO's complex security environment. This is especially true against an adversary utilizing asymmetric means such as hugging techniques or employing human shields, that mitigates the overmatching precision lethality of US forces.[61] The next part of the study focuses on the doctrinal levels in which NLWs apply above this tactical level.

The Applicability of NLWs to Strategic/Operational Doctrine for PSOs

The applicability of NLWs to strategic and operational level doctrine is supported by *Joint Vision 2020* (JV2020) as well as in studies done by the previously referred to American Systems Corporation (ASC), the Council on Foreign Relations (CFR), and the Center for Strategic and International Studies (CSIS).

JV2020 states that, "the overall goal of the transformation . . . is the creation of a force that is dominant across the full spectrum of military operations--persuasive in peace, decisive in war, preeminent in any form of conflict."[62] Of the four operational concepts discussed, future NLW systems will enhance precision engagement as well as significantly reducing undesired personal injury and material damage.[63] According to JV2020,

> The resulting system of systems will provide the commander the broadest possible range of capabilities in responding to any situation, including both kinetic and nonkinetic weapons capable of creating the desired lethal or non-lethal effects… in support of the objectives of the campaign.[64]

JV2020 builds on the foundation established with *Joint Vision 2010*, and confirms the direction of the ongoing transformation of operational capabilities, and emphasizes

the importance of further concept exploration, experimentation and analysis.[65] In addition, JV2020 emphasizes that technological innovation must be accompanied by intellectual innovation that leads to changes in the Armed Forces organization and doctrine.[66] Therefore, JV2020 advocates operational capabilities that encompass the development of NLWs doctrine at the operational level across the full spectrum of military operations.

ASC's review of the Universal Joint Task List (UJTL) also allows for a very straight-forward assessment of each task's application to the three levels of doctrine. Each of the tasks on the UJTL is conveniently categorized at the strategic, operational, or tactical level of applicability. Of the approximately 360 tasks in which NLWs were potentially applicable, NLWs applied mostly to the tactical level (246 tasks). However, NLWs also applied to the operational as well as strategic level tasks (71 tasks and 38 tasks respectively).[67] Furthermore, the JMAA/JMNA report's conclusions supported the potential applications for NLWs across the same levels as ASC's conclusions. These reports also agree with earlier studies done by the Council on Foreign Relations (CFR), a non-profit, nonpartisan national membership organization founded in 1921, dedicated to fostering,

> America's understanding of its fellow members of the international community, near and far, their peoples, cultures, histories, hopes, quarrels, and ambitions; and thus to serve, protect, and advance America's own global interests through study and debate, private and public.[68]

Of the several studies demonstrating how NLWs have and continue to be applicable to PSOs, two studies done in 1995 and 1999 by the influential CFR, provide an easy measure of change in the applicability of NLWs. More importantly, the CFR

takes no institutional position on policy issues and has no affiliation with the US government.[69] Each of these studies assessed, "the current status of NLWs development and availability within the DoD for their potential to support US military operations and foreign policy." The 1995 study analyzed the "Black Hawk Down"[70] event in Somalia and noted that,

> the reported death of an estimated 6,000 to 10,000 Somalis from actions by U.N. forces, many as a result of fire from helicopter gunships, seems counter to the stated purpose of the intervention. . . . The effect on the U.S. forces of firing into crowds including women and children in which snipers are concealed is also relevant. In Somalia, street and point control through the use of incapacitating foams and slight inducing smells could have offered significant advantages over deadly fire from helicopter gunships in achieving political goals.[71]

The 1995 CFR study group, chaired by Malcolm H. Wiener, concluded that NLW options were required to accommodate some of the complex problems of national security that the US would continue to face in the future.[72] A seventeen-member task force, chaired by Richard L. Garwin, composed the 1999 Council on Foreign Relations study of non-lethal technologies. This task force endorsed the findings of the 1995 CFR study with no notable changes.[73] The task force re-emphasized that, "NLWs have the potential for providing new strength for diplomacy, new credibility for deterrence, new flexibility for the military [and] new strategic options for policy-makers."[74] There is, however, evidence that the US Government was also exploring the use of NLWs in US policy in 1999. This is seen in a report done by the Center for Strategic and International Studies (CSIS) directed by Charles Swett, on assignment from the Office of the Under Secretary of Defense for Policy, and Dr. Dan Goure.

The CSIS, "Non-Lethal Weapons Policy Study" (February 5, 1999) explored the need for US national policy on NLWs[75] in response to senior US policy makers' interest

in NLWs as instruments of national policy.[76] Specifically, the CSIS study investigated long-range, large-scale weaponization of non-lethal technologies, for possible use as instruments of policy in a broader, and more strategic sense,[77] rather than the tactically oriented NLWs that DoD has pursued.[78] The study concluded that, NLWs could provide critical support capabilities to accomplish the US military strategy of shaping, responding and preparing, as well as introduce a new US deterrence policy, particularly against emerging threats.[79]

Deterrence is a concept based on credibility and costs.[80] The deterred state must believe that the deterring state is willing and able to act upon the threats issued and that the cost for failing to heed the threat is unacceptably high.[81] NLWs augment US credibility when committing force by providing the US a wide range of force options and the flexibility to act.[82] During the Cold War, nuclear deterrence made it impossible for large states to fight each other in earnest without the risk of mutual suicide.[83] However, just as nuclear deterrence was overkill and therefore not a credible course of action, the same principle applies when sending fully armed troops into PSOs wielding the threat of lethal force.[84] Are we really going to shoot the people we are trying to help? Attempting to conduct PSOs while limited by the political primacy of minimizing damage to civilians and property using only the threat of lethal force has limited credibility.[85] Therefore, the employment of NLWs could offer a crucial aspect of American deterrence that allows the US to credibly commit itself in the post-Cold War environment.[86] Although NLWs lack the same material and subjective qualities that gave nuclear deterrence its salience, NLWs share a degree of novelty with nuclear weapons in that, "the US can employ

significant military actions to which many potential adversaries do not have access."[87] Additionally, there is a moral aspect associated with the use of NLWs worth discussing.

The use of NLWs also offers a unique moral dimension that is at the opposite end from that connected with the use of nuclear weapons.[88] NLWs might allow the US to "seize the moral high ground"[89] by morally denying the antagonist's use of his offensive weapons, lest he risk coming across as the aggressor as well as the instigator of hostilities.[90] Furthermore, the use of NLWs could help the US to limit enemy casualties when facing a significantly inferior force in order to prevent a massacre and loss of public support. In the midst of the coalition's air campaign early in Operation DESERT STORM, Sir Michael Howard made a stark comment.

> However skillful may be American statesmanship, however successful the allied armed forces in the field, if American public opinion is so horrified by the sight of slaughter that it ceases to be supportive of the whole enterprise, Saddam Hussein might still not lose the war.[91]

This concern came to the fore only a couple of days into the initiation of the ground campaign of Operation DESERT STORM when the NCA faced the likely negative public reaction to the graphic media coverage of the massacre of Iraqi soldiers on the "highway of death."[92] The likely negative public reaction played heavily into the NCA's decision to stop the war at 100 hours, prior to the destruction of Iraq's Republican Guard.[93] There are, however, other unique dimensions of NLWs to consider.

The CSIS study also determined that NLWs expand current target options as well as created new capabilities unique to the use of NLWs. There are three special characteristics of NLWs: (1) access to new targets, (2) access to existing targets at new times, and (3) new options in existing situations.[94] The six new capabilities that NLWs

bring are listed here and explained more specifically in Appendix D: (1) Identify the enemy as the national leadership rather than the general populace. (2) Achieve limited objectives. (3) Preserve the stability of the status quo. (4) Respond to ambiguous situations. (5) Meet alliance concerns. (6) Act preemptively.[95] Each of these new capabilities contributed greatly, and in some cases, uniquely, in addressing a number of the new policy-driven needs for additional military capabilities. The CSIS study demonstrated that both the NSS and the QDR reflect the need for capabilities offered by NLWs to bolster US foreign and defense policies against emerging threats.[96] In addition, every Defense Planning Guidance (DPG) since the fiscal year (FY) 1996-2001 reflects policy driven needs for NLW capability requirements.[97] The FY2001-2005 DPG, addresses NLWs as follows:

> NLWs have proven useful across the range of operations, including both conventional combat operations and the many categories of military operations other than war…. Current efforts to study and understand the use of NLWs from the strategic to the tactical levels must be integrated into all future military and interagency concepts and operations.[98]

NLWs clearly offer the military operational as well as strategic capabilities that expand options available to decision-makers when dealing with the complex security environment of the Global War on Terrorism. In order to determine the military's progress in achieving the guidance in the NSS, QDR, and DPG for NLWs development from the tactical to the strategic level, it is critical to evaluate each service's NLW doctrine and NLW training programs. Due to the intermingling of the levels of war, the analysis of NLWs doctrine above the tactical level necessarily includes that service's current implementation of NLWs.

## Implementation of Service NLW Doctrine and NLW Training Programs

The changes that have occurred with respect to service, as well as, joint NLWs doctrine and training programs can be seen by reviewing and comparing base NLW doctrine and training programs with subsequent updates. Doctrine published in 1998 or earlier that was updated in1999 or later provides the easiest means of discerning doctrinal changes. This thesis evaluates NLW doctrine and programs for Joint Command first, followed by those of the Marine Corps, the Army, the Air Force and then the Navy.

### Joint NLW Doctrine and NLW Training Programs

Joint NLW documents consist primarily of Memoranda of Agreement (MOA), the Multi-service NLW Tactics, Techniques, and Procedures (Multi-service NLW TTP), and the JNLWP Master Plan. The 21 January 1997 MOA (MOA-1997) established the JNLWD as an organization and outlined the Directorate's organizational and operational structure.[99] MOA-1997 was strictly tactical in nature, due to the JNLWD's primary task of quickly providing combatant commanders with NLWs.[100] The subsequent 23 June 1999 MOA, besides some organizational changes, still only required that the JNLWD and service programs focus on non-lethal technology with tactical applications.[101] However, the latest update, signed on 10 May 2002 (MOA-2002), departed significantly from the tactical scope of its predecessors. While MOA-2002 provides some organizational updates to the JNLWD and the inclusion of the US Coast Guard, the most significant part of the MOA-2002 update is the change of JNLWD and service focus from strictly tactical applications to include operational as well as strategic applications.[102]

In an effort to provide a single source reference on the tactical employment of

NLW and supporting systems, the JNLWD and the USMC lead the development of the Multi-service NLW TTP. The first version, dated October 1998, did not venture beyond the tactical level. Although the 1998 version was revised and updated in January 2003, it has stayed true to its tactical focus.

Finally, the JNLWP Master Plan of June 2000 discusses the JNLWD's interests in planning and integration of NLWs into advanced concept technology demonstrations and advanced technology demonstrations, but still represents a bottom-up approach of outfitting current NLWs needs at the tactical level. An updated Master Plan has not been published although MOA-2002 spells out the requirement to develop non-lethal technologies for use above the tactical level. But, given the way that the previous MOAs dictated the tactical scope of the joint as well as service NLWs programs, however, MOA-2002's expanded focus beyond the tactical level is quite significant and should spawn the production of appropriate doctrine in the future. As of today, though, existing Joint NLWs documents and programs are entirely tactical.

## USMC NLW Doctrine and NLW Training Programs

As the Executive Agent (EA) for the JNLWP, the Marine Corps has some influence in the JNLWD products although the USMC and JNLWD are completely separate organizations. Implying otherwise would be incorrect. The Marine Corps, however, has traditionally been among the most active of the services in terms of support to the JNLWD's programs and document development. Furthermore, the Marine Corps runs the Inter-Service Non-Lethal Individual Weapons Instructor Course (INIWIC), the only DoD school authorized to certify NLWs trainers to educate units and to insert non-lethal capabilities training into recurring unit and individual training events.[103] Originally

the Marine Corps' MP School was based out of Fort McClellan, Alabama starting in 1997. In 2000, it moved to Fort Leonard Wood, Missouri and has been instructing students from every service with a staff of four Marine Corps instructors.[104] The course covers training in equipment use, doctrine, and tactics, and also addresses public affairs, crowd control dynamics, and communication skills.[105] Each service has had a steady number of seats per year in the class since relocating to Fort Leonard Wood. In FY 2003, the Marine Corps held 85 seats, the Army held 205 seats, the Air Force, Navy and Coast Guard each held five seats.[106] Furthermore, the Marine Corps is increasing its INIWIC seats to 135 seats for FY2004. Notably, the majority of the Marine Corps students attending INIWIC are from the combat arms branches of the Marine Corps rather than from their military police (MP) branch.[107] This reflects the Marine Corps' incorporation of repetitive NLWs training requirements into each unit's deployment work-up cycle.[108] Spreading the NLWs training and certification across the various Marine Corps branches is advantageous since all the mechanisms are in place to fulfill NLWs training from certified instructors in every unit. The Marine Corps is unique among the services in this regard.[109] In general, the other services' students are primarily MPs with only a fraction of them coming from their combat arms branches.[110] Taking into account the Marine Corps' tactical doctrine as well as the depth of their NLW training, the scope of the current programs has transcended tactical, and borders upon the operational level.

## Army NLW Doctrine and NLW Training Programs

Although the Army has had an approved NLWs mission needs statement (MNS) since 1996,[111] existing Army NLW doctrine is limited to FM 19-15, *Civil Disturbances* (25 November 1985). The aging FM 19-15 only provides TTPs to engage in non-lethal

activities using riot control equipment (agents, batons, and shields) in a threat environment that does not currently exist.[112] However, a first coordination draft of FM 19-15 is under review to update this aging field manual. A quick review of the coordination draft reveals that much of the same information is already contained in the Multi-service NLW TTP. However, according to Jo Barnes at the Army MP School's Doctrine Office, colocated with the MP school in Fort Leonard Wood, Missouri, the intent was to make the first coordination draft of FM 19-5 coincide with the Multi-service NLWs TTPs but address some philosophical differences.[113] One of the aims of the first coordination draft is to depart from the civil disturbance focus of the Mutiservice NLW TTP and advocate that non-lethal capability sets (NLCS) provide the tools that a commander can apply in missions and situations across the full spectrum of operations.[114]

Also under consideration for the Army is an Operational Requirements Document (ORD) dated 21 November 2002, which is designed to provide a scaled-down version of the current 260-man NLCS (NLCS ORD) for use at the platoon level (approximately 40 people).[115] This small-unit focus would allow a greater dispersion of non-lethal assets. The NLCS ORD also removes problematic equipment such as the Modular Crowd Control Munition, which resembles an M18 Claymore mine that shoots non-lethal rubber "sting" balls.[116] However, according to the Colonel Timothy Lamb, Assistant Commandant, US Army's MP School, the NLCS ORD is being re-evaluated at the Department of the Army since current NLCS are composed of first and second generation non-lethal technology which does not conform to the Army's transformation strategy for the Objective Force.[117] First and second generation NLWs still rely on Vietnam era delivery methods and nearly all of these are out-ranged by a hand-thrown stone.[118] The

goal of the NLCS ORD, however, is only one aspect of a successful mechanism. While having the NLWs available is necessary, having certified trainers from INIWIC is critical for the proper employment of non-lethal assets.

The Army has held the largest number of seats at INIWIC since the course stood up at Fort Leonard Wood as the only sanctioned multi-service NLWs school to certify NLWs trainers. However, only a small fraction of the Army's 205 seats at INIWIC go to students from the combat arms branches.[119] The result is a heavy reliance on the MP community to accomplish the rapidly increasing force protection as well as civil disturbance and crowd control requirements in an increasingly complex security environment. The Army's MP community is roughly 15,000 active-duty personnel, with another 30,000 in the Army Reserves and National Guard.[120] However, unless NLW training is incorporated into each unit's mission essential task list (METL), the basic understanding of the role of NLWs as well as instilling the required mechanisms into the Army's combat arms branches may not be achieved.[121] A reduction in the Army's yearly seats at INIWIC from 205 to 149 exacerbates the problem.[122] In conclusion, the Army's NLW documents and programs are implemented at the tactical level. However, the Army's NLW programs do not reinforce NLWs integration into the force as effectively as the Marine Corps' NLW programs.

### Air Force NLW Doctrine and NLW Training Programs

There is only one other service that has had a NLWs MNS dating back to the mid-1990s- the US Air Force. In July 1996, the Unified Commanders (COMCOMs) participated in the DoD's NLW User's Conference. This conference represents an initial attempt to evaluate non-lethal tasks and prioritize them for their respective area of

responsibility (AOR).[123] As a direct result, the Air Force put together a *Mission Need Statement for Non-Lethal/Limited Effects Weapon Capability* dated 6 November 1996 signed by Brigadier General James L. Higham, then the Vice Commander for Air Force Special Operations Command. This MNS emphasized special operations forces (SOF) support, however, it set the tone for the Air Force's NLWs exploration beyond the tactical level. Regarding first and second generation NLWs, the Air Force noted that,

> There are some simple non-lethal/limited effects weapon systems available today, such as pepper spray, tear gas, and rubber bullets. Full advantage should be taken of these systems. All of these current systems have limited uses and severe practical or political limitations.[124]

The Air Force then made reference to several DoD and Department of Energy (DOE) projects in pursuit of advanced non-lethal/limited effects technologies and noted that, "these laboratory projects require definitive guidance and explicit/clear requirements to continue science and technology development."[125] The difficulty with evaluating the Air Force's NLW documents is their association with currently classified advanced technology programs. This was the case with the ADT.

However, the Air Force has placed the most emphasis on researching human effects of all the services. In fact, the JNLWD recently recognized the Air Force's medical research facilities at Brooks AFB in San Antonio, Texas, as the Human Effects Center of Excellence.[126] The Air Force's only other significant NLW program involves the Directed Energy Directorate of the Air Force Research Laboratory (AFRL) at Kirtland AFB, Albuquerque, New Mexico.[127] However, according to the Naval Studies Board's recent report, *An Assessment of Non-Lethal Weapons Science and Technology*, "the Air Force, under AFRL and JNLWD funding, has developed the leading capabilities

among the services in both NLWs effects testing and understanding and in directed-energy source development and system susceptibilities."[128] The earliest deployment of an ADT system, however, is estimated to be 2009.[129] Although the ADT is still under development and has yet to be realized as a tactical, possibly operational, capability, the Air Force's NLW documents and programs do not address the tactical employment. With the low numbers of students attending INIWIC, the Air Force's NLW training program is practically non-existent. On the other hand, the Air Force's meager five students attending INIWIC a year is slated to increase to twenty-five for FY2004 if funding issues are resolved.[130] The last service to be evaluated, the Navy, seems to have a program of similar scope to that of the Air Force addressing advanced technology programs.[131]

Navy NLW Doctrine and NLW Training Programs

The Navy's emphasis on expanding its NLWs capabilities, has been practically nonexistent.[132] The department of the Navy is still assessing in what areas and the extent to which NLWs research should progress.[133] Overall, the NSB concluded that, "the Navy has had less involvement with NLWs than the other services."[134] The Navy was the last service to organized a NLWs office (OPNAV N757) to act as the single point of contact for NLWs for the Navy.[135] At the end of FY2002, OPNAV N757 received a modest boost in manpower. OPNAV N757 has, however, demonstrated an impressive amount of activity within this last year.[136] In addition, OPNAV N757 has recently begun to address required improvements in port protection and expanded strike capabilities.[137] The Navy's actual implementation of NLWs doctrine and training, however, is not apparent and does not reach the tactical level. Beyond the scope of the current NLWs doctrine and training programs are the future concepts which extent five, ten, even twenty years into the future.

Of particular interest are the changes with respect to NLWs that have occurred within service as well as joint NLWs forward-looking documents and experimentation.

Exploration of Service and Joint NLW Concepts and Experimentation

Exploration in the armed services has often manifested itself as White papers, service DTLOMS and joint DOTMLPF and other vision or concept papers. These are all forward-looking documents that attempt to assess the impact of incorporating change to the military. A comparison of Joint DOTML-PF, service DTLOMS and other forward-looking documents and experimentation published or conducted in 1998 or earlier with those conducted in1999 or later provides the easiest means of discerning doctrinal changes. When the Army's vision of the future began to take shape back in 1999, an Objective Force white paper was also drafted to reach beyond current doctrine and inform, "leaders within the U.S. Government, the defense establishment, industry, and the academic and intellectual communities."[138]

A white paper is an official, in-depth and authoritative government report.[139] Joseph Coates' May 1970 paper, titled, *Non-Lethal and Nondestructive Combat in Cities*, is the earliest example found in the course of this thesis research. Joseph Coates conducted this study as an associate of the Institute for Defense Analysis (IDA). The sponsoring military activity was the Advanced Research Projects Agency (ARPA).

Joint NLW Exploration and Experimentation

There are five primary documents that represent the Joint NLW doctrine exploration. They are the Joint Concept for Non-Lethal Weapons (5 January 1998), the Family of Non-Lethal Capabilities Mission Needs Statement (10 Dec 2002), and the Joint Warfighting Center Joint Doctrine Series Pamphlet 2 *Doctrinal Implications of Low*

*Collateral Damage Capabilities* (27 January 2003).

The JNLWD promulgated the Joint Concept for Non-Lethal Weapons on 5 January 1998. The Joint Concept provided a framework within which, "all research, development, acquisition, and doctrine for non-lethal technologies would evolve to support our operating requirements."[140] In consonance with MOA-97, the guiding principles of the document expressly states that, "Department of Defense non-lethal weapons programs will *focus* efforts on those weapons and systems designed primarily for employment at the tactical level."[141] However, this document is essentially a DTLOMS analysis for NLWs that served to limit the scope of joint and service programs to the tactical level.

The JROC reviewed and approved the Family of Non-Lethal Capabilities (FNLC) MNS on 10 December 2002. The approval of the FNLC MNS was significant since a large amount of DOTML-PF analysis has occurred through the previous joint MAA/MNA onward to the MNS. The Family of Non-Lethal Capabilities MNS indicates that the subsequent DOTML-PF analysis has concluded that COMCOM and service mission needs to successfully conduct counter-personnel, counter-material, and counter-capability cannot be achieved by changes to existing non-material and material items.[142] Furthermore, the FNLC MNS delineates some definitive mission needs and characteristics of the capabilities desirable in the next generation of NLWs. The key over-arching constraints from the FNLC MNS are described:

> The accuracy of delivery must allow for employment in the demanding, complex urban environment. A remote delivery capability is desired, where technologically practical and operationally applicable by system. Counter-personnel systems must possess a delivery capability that dispenses the chosen payload in a non-lethal, non-destructive manner. Systems within the FOS [family

> of systems] focused on counter-materiel applications and counter-capability applications must provide precise, non-kinetic disablement of a target without unintended effects on personnel and without damage to the surrounding infrastructure, property, and environment. . . . Counter-capability applications must also be non-lethal to personnel and be supported by other operational capabilities such as Information Operations. . . . Where technologically feasible, the non-lethal FOS should provide capabilities that permit the U.S. prompt exploitation of an adversary in spite of any lingering effects following non-lethal employment. Systems that are modifications to current systems (add-ons) must not degrade that system's operational performance.[143]

The FNLC MNS goes on to address requirements in logistics, survivability, operational environment, and C4I interfaces.[144] Although the Army and Air Force have had NLW MNSs, neither approached this level of characterization. Since the FNLC MNS was based on conclusions drawn from the JMAA/JMNA, the doctrinal concepts include NLW application at all levels of war.

The Joint Warfighting Center (JWC) Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities* is, "intended to facilitate changes to joint doctrine," by discussing doctrinal implications associated with low collateral damage capabilities (LCDCs).[145] The JWC drafted the pamphlet as a result of favorable joint experimentation with LCDCs from early 2000 through mid 2001.[146] The crux of the experimentation was the fielding of a family of low collateral damage systems along with consideration of how to employ them in packages or sets of complementary capabilities that could be substituted for destructive ways and means.[147] Sandia National Laboratories and others verified that all of the technologies used in the packages were available now.[148] Some of the conceptual packages proposed were "clearing," "barrier," "sensor," and "defensive" packages.[149] An example of a LCDC package for bridge denial, for example,

> combined maloderants to encourage personnel to vacate the bridge area; seismic and acoustic unattended ground sensors to detect and identify adversary vehicles; a foam-dispensing system with embedded submunitions to provide a barrier to traffic on the bridge; and a number of small robotic vehicles armed with various lethal and non-lethal weapons to defend the barrier and sensor subsystems.[150]

The JWF also experimentally employed other applications using a single type of high-technology LCDC weapon. However, the four conceptual elements of the LCDC experimentation provide some rudimentary doctrinal guidance with respect to their anticipated employment. The conceptual elements are: (1) The use of nonkinetic engagement means such as directed energy systems, immobilizing systems, and fuel contaminants, and aerosols. (2) Delivery means including manned and unmanned platforms, ground and air delivery, and long-range precision fire systems. (3) Experimental modification of current doctrine such as JP 3-60 (*Joint Doctrine for Targeting*) to include processes for LCDW target selection, means selection, and delivery. And (4), an effects-based battle damage assessment process.[151]

The results of an analytically based limited objective experiment and a leveraged event (US Southern Command's joint exercise UNIFIED ENDEAVOR 01-3) found that weapons based on non-lethal technologies could achieve operational and strategic effects.[152] Furthermore, the availability of a full array of LCDC could provide the JFC with alternative campaign strategies, and fundamentally change the way the joint force plans and executes operations.[153] The joint mission requirements for counter-capability against such things as WMDs along with the exploration into how to use the conceptual, next generation NLWs, indicates a beginning of doctrine above the tactical level. Joint exploration and experimentation appear to be at the operational level.

## Marine Corps NLW Exploration and Experimentation

It is hard to dispute that the US Marine Corps has done the most NLWs development of all of the services.[154] The Marine Corps's experimentation and concept exploration are summarized in Appendix E. Of this lengthy list, the *United States/United Kingdom Non-Lethal Weapons Urban Operations Wargaming Program* (US/UK NLWs Wargame) is the most significant to NLWs doctrinal exploration. Cosponsored by the Secretary of Defense, Office of Net Assessment and the United Kingdom Ministry of Defence, the US/UK NLWs Wargame started in January 2000 and extended over the course of an entire year.[155] The US/UK NLWs Wargame sought to do more than examine the feasibility of acquisition and employment of a number of near-term NLW capabilities. Specifically, the wargame was designed to identify policy, requirements, and, "to determine employment options across different levels of war (tactical, operational, strategic) and in different operational scenarios (Major Theater of War, Non-combatant Evacuation, Small Scale Contingency)."[156]

Assessments were compiled at each level of war addressing overarching issues such as tactical/operational/strategic implications, preemption or first use, employment and cessation criteria, rules of engagement, treaty and legal implications, host nation/coalition warfare issues, and international public information (media-psychological operations (PSYOPS)). Several of the observations provided an initial glimpse of doctrine above the tactical level. Thus, the Marine Corps' NLWs exploration and experimentation is at the operational/strategic level. The Marine Corps' efforts has had the most impact on the present since their status as Executive Agent obligates them

to fill the NLWs capability gap. Interestingly, the US Army seems to have a doctrinal approach that is completely opposite of this.

## Army NLW Exploration and Experimentation

The Objective Force transformation is driving the US Army's approach to NLW exploration and experimentation. There are currently three Army NLW conceptual documents. (1) *Concept for Non-Lethal Capabilities in Army Operations*, TRADOC Pamphlet 525-73 (TRADOC Pam-1996) (01 December 1996); (2) *Infantry Branch Concept for Tactical Non-Lethal Capabilities* (IBC) (27 April 1998); And (3) the first coordination draft update *Concept for Non-Lethal Capabilities in Army Operations*, TRADOC Pamphlet 525-3-23.40 (TRADOC Pam-2003) (15 March 2003).

TRADOC Pam-1996 describes the required NLWs capabilities in broad, general categories and is essentially a DTLOMS analysis for improving the ability of leaders and soldiers to effectively employ non-lethal capabilities.[157] As one of the earlier concept papers addressing NLWs, it provided a diverse array of NLWs employment examples across the full range of offensive and defensive military operations. However, the required capabilities that are specified are consistent only with tactical level requirements and doctrine. The same is true for the IBC, which states that, "this concept provides information regarding the tactical aspects of the Army's non-lethal capabilities program."[158] The draft TRADOC Pam-2003's connection with the Objective Force, however, distinguishes it from these previous concepts. The Army has an idea of what the Army's soldier of the future will look like and it is contained in Army's transformation documents. Some of the key documents are: (1) the Unit of Action O&O (22 Jul 02); (2)

the Unit of Employment O&O; (3) the FCS ORD (30 Aug 02); and (4) the Objective Force Warrior ORD.[159]

These transformation documents contain non-lethal capability "hooks"[160] which dictate the integration of lethal and non-lethal weapons into a true, rheostatic, scalable (lethal-to-non-lethal) effects capability for FCS platforms, crew-served weapons, and individual soldiers.[161] The integration of NLWs from FCS platforms down to the individual soldier allows the Objective Force's Corps level to provide reach back support and to non-lethally deny an area, as well as to neutralize vehicles and facilities.[162] Thus, the Objective Force further requires, "the ability to couple large area non-lethal effects with precision delivery . . . for precise and measured control of target effects to avoid attrition warfare and to mitigate non-combatant casualties."[163] According to Col. Timothy Lamb, the future Objective Force non-lethal/scalable effects systems, "will be employed across the spectrum of operations, Smaller Scale Contingencies to Major Combat Operations (SCC-to-MCO) by Objective Force Line-of-Sight (LOS), Beyond LOS (BLOS) and Non-LOS (NLOS) capable systems."[164] The proposed ranges are listed in Table 1.

Table 1. US Army Objective Force NLW Engagement Category Ranges[165]

| | | |
|---|---|---|
| LOS | Out to 5 Km | Collocated sensor, decider, shooter. |
| BLOS | Out to 12-16 Km | Independent sensor; collocated decider, shooter. |
| NLOS | Out to 30-150 Km | Independent sensor; decider and sensor may or may not be collocated. |

This type of doctrinal approach is similar to what the Army did in using doctrine to shape the Deep Battle technology needed for its forward-looking AirLand Battle doctrine. One critical observation resulting from the Army's doctrinal approach was the creation of a lethal gap, for over ten years in some areas, between current capabilities and AirLand Battle doctrine.[166] The lethal gap was due to the critical oversight that AirLand Battle doctrine was dependent on technologies still being researched, combined with, "the Army leadership grossly underestimated the time and expense it would take to develop and field the new military technologies."[167] While the Army used its AirLand Battle doctrine to shape the Deep Battle technology, the Army leadership conceded that the Army would have to rely heavily on the Air Force to prosecute parts of the Army's Deep Battle doctrine.[168] Likewise, the Objective Force doctrinal approach could result in a similar capability gap, albeit a non-lethal capability one, and depend upon jointness for execution. Regardless, the Army's non-lethal doctrine is focused on a future force that will function jointly at the operational/strategic level. The Air Force has the leading capabilities among the services in both NLWs effects testing and directed-energy technology.[169]

## Air Force NLW Exploration and Experimentation

Starting as far back as 1996 with the Air Force's MNS, Air Force NLW exploration and experimentation has focused on next generation technologies. In addition, the Air Force is the only service that promotes NLWs as a core capability in their service vision. Air Force Vision 2020 states that the Air Force, "will harness new ways to achieve effects, ranging from directed energy to non-lethal weapons."[170] This vision encompasses the Air Force's exploration and experimentation with ADT as well as

other NLWs applications in space. In January 2001, the Air Force Space Command started SCHRIEVER 2001, a five-day space wargame that, "focused exclusively on space as a medium for potential conflict, including non-lethal options such as 'temporarily' interfering with an opponent's satellites (e.g., 'dazzle' optics or disrupt communications.)"[171] The Air Force's extension of NLWs into space operations is significant, since the larger percentage of space based sensors or communications satellites are termed national assets. These national assets are strategic level assets that provide information used by the highest levels of civilian and military decision-makers. Given the precedence set by SCHRIEVER 2001 and the large size of the Air Force's classified programs, it is reasonable to assume that other NLW capabilities targeting strategic assets have been considered for experimentation. Therefore, the Air Force's NLWs exploration and experimentation appears to be at the operational/strategic level. In stark contrast, the Navy's NLWs exploration appears to be just starting.

## Navy NLW Exploration and Experimentation

In a previous study for the Navy, *Technology for the United States Navy and Marine Corps, 2000-2035: Becoming a 21st-Century Force*, published in 1997, the Naval Studies Board concluded that the development and employment of NLWs would be essential for naval forces conducting expeditionary warfare and MOOTW.[172] The latest report by the Naval Studies Board (NSB), *An Assessment of Non-Lethal Weapons Science and Technology* (2003), concludes that the Navy's formal expansion of NLWs capabilities since then has been almost nonexistent, although some NLWs unique to the Navy are under consideration and are being tested.[173] However, the primary goal of the later study was to help focus and frame potential applications of NLWs technologies in

its operations.[174] The NSB study concluded that NLWs had applications in two major areas. The first area is force protection. While likely stemming from force-protection issues resulting from the terrorist attack against the USS COLE, it applies more broadly to issues of self-protection when ships and their crews are involved with sanctions enforcement and conducting VBSS (visit, board, search, and seizure) operations.[175] The second area is the implementation of the Sea Strike concept. NLWs provide an important aspect of Sea Strike's effects-based targeting in littoral areas where civilian casualties and property damage must be held to a minimum.[176]

Since the conclusion of the NSB report, however, there has been a flurry of activity from the Navy's NLWs office (OPNAV N757). The NLWs office has recently worked with the Army in an attempt to create a Maritime NLCS for force protection of naval forces.[177] In addition, they have produced a *Draft Force Protection Capability Against Asymmetric Threats Mission Needs Statement* (27 January 2003) which is currently in Flag level review and integrating Fleet inputs.[178] The Fleet inputs addressed verification of projected threat, requirements, capabilities, joint interoperability concerns, as well as DOTLPF (doctrine, organization, training, leadership, personnel, and facilities). Despite these latest developments, the Navy's NLWs exploration and experimentation has a tactical focus.

## Summary of Each Service's NLWs Programs

The evaluation of which service provides the greatest degree of NLWs tactical, operational and strategic concepts is accomplished by summarizing the information obtained in the preceding sections for each service's implementation and exploration at the various doctrinal levels (tactical, operational, and strategic). Since the amount of

progress made in any particular category is also relative, the scale is the associated level of doctrine and a numerical placement relative to the where they stand in relation to the other services.

The results of the analysis of each service as well as joint implementation and exploration of NLWs have been summarized in table 2. The results show that the Marine Corps has made the most balanced development of NLWs doctrine in its current implementation and has conducted extensive exploration and experimentation above the tactical level (Appendix E refers). The Marine Corps' NLW programs do the most to foster NLWs as a general capability that applies across the operational spectrum. The Army is also highly engaged but treats NLWs as a special capability that augments combat forces prior to deployments. In the future, however, the Army's transformation to the Objective Force will provide for the integration of NLWs and lethal force at all levels of war across all branches of the Army. The Joint Command and the Air Force are engaged. However, the Air Force has maintained a focus on high technology from the very beginning with almost no tactical implementation of NLWs. The Navy has started engaging in NLWs development and should be able to benefit from the large amount of work already done by the sister services to tackle the formidable security challenges presented by the maritime environment.

Table 2. Summary of Service NLWs Implementation and Exploration Programs.

| | | Level (Rank) | Overall Rank |
|---|---|---|---|
| Joint | Implementation | Tactical (2) | 3 |
| | Exploration | Operational (2) | |
| Marine Corps | Implementation | Tactical+ (1) | 1 |
| | Exploration | Operational+ (1) | |
| Army | Implementation | Tactical (2) | 2 |
| | Exploration | Operational+ (1) | |
| Air Force | Implementation | Practically none (3) | 3 |
| | Exploration | Operational+ (1) | |
| Navy | Implementation | Practically none (3) | 4 |
| | Exploration | Tactical (3) | |

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[124]Ibid., 2.

[125]Ibid.

[126]E.R. Bedard, "Non-lethal Capabilities: Realizing the Opportunities," 5.

[127]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 64.

[128]Ibid., 64.

[129]Peter Clark, "Millimeter-wave energy to be used in a weapon," *Electronic Engineering Times*, no. 1170 (6/11/2001), 26.

[130]Phone conversation with Capt. Conlon Carabine (24 Mar 2003).

[131]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 4.

[132]Ibid., 5.

[133]Ibid., xii.

[134]Ibid., 49.

[135]Ibid.

[136]Phone conversation with Mr. Ray Grundy, US Marine Corps NLWs Program Support Officer (25 February 2003).

[137]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 9.

[138]DOA White Paper, “Concepts for the Objective Force,” ii.

[139]*Webster’s New World Dictionary*, 3rd ed.,1524.

[140]JNLWD, *Joint Concept for Non-Lethal Weapons*, 1.

[141]Ibid., 7.

[142]Joint Chief of Staff, Vice Chairman of the Joint Chiefs of Staff, *Family of Non-Lethal Capabilities Mission Needs Statement* (10 December 2003), 1-2.

[143]Ibid., 4-5.

[144]Ibid.

[145]JWFC Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities*, 2.

[146]Phone conversation with Mr. John Fenter, US Joint Forces Command (USJFCOM), Joint Experimentation Directorate (J-9) (5 March 2003).

[147]JWFC Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities*, 10.

[148]Phone conversation with Mr. John Fenter, USJFCOM, J-9 (5 March 2003).

[149]JWFC Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities*, 13.

[150]Ibid., 4.

[151]Ibid.

[152]Ibid., 11.

[153]Ibid., 17.

[154]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 50.

[155]Marine Corps, and United Kingdom, United States/United Kingdom Non-Lethal Weapons Wargaming Program, CD-ROM, 2001, "US/UK Non-Lethal Weapons Urban Operations Wargaming Program, Introduction and Overview," 1.

[156]Ibid., 2.

[157]Department of the Army, Training and Doctrine Command (TRADOC) Pamphlet 525-73, *Concept for Non-lethal Capabilities in Army Operations*, Change 1 (Fort Monroe, VA: TRADOC, 1 December 1996), 1.

[158]DOA, *Infantry Branch Concept for Tactical Non-lethal Capabilities*, 5.

[159]Col. Timothy Lamb, "Army Non-Lethal Weapons/Scalable Effects (NL/SE) Program: A Think Piece," 6.

[160]Phone conversation with Col. Timothy Lamb (25 March 2003).

[161]Col. Timothy Lamb, "Army Non-Lethal Weapons/Scalable Effects (NL/SE) Program: A Think Piece," 3.

[162]Draft TRADOC Pamphlet 525-3-23.40, *Concept for Non-lethal Capabilities in Army Operations*, 10.

[163]Ibid., 11.

[164]Col. Timothy Lamb, "Army Non-Lethal Weapons/Scalable Effects (NL/SE) Program: A Think Piece," 1.

[165]Ibid., 4.

[166]Driggers, 90.

[167]Ibid.

[168]Ibid., 88.

[169]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 64.

[170]*Air Force Vision 2020*, Internet: http://www.af.mil/vision/, accessed 17 February 2003, 6.

[171]Colonel Daniel Smith, "Space Wars," *The Defense Monitor*, Vol. XXX, no. 2 (February 2001), 4.

[172]Committee on Technology for Future Naval Forces, Naval Studies Board, Commission on Physical Sciences, Mathematics, and Applications, National Research Council, *Technology for the United States Navy and Marine Corps, 2000-2035* (Washington D.C., National Academies Press, 1997), 87.

[173]NSB, *An Assessment of Non-Lethal Weapons Science and Technology*, 49.

[174]Ibid., xii.

[175]Ibid., 2.

[176]Ibid.

[177]Mr. Wesley Barbour, US Army NLWs Program Support Officer, Wesley.Barbour@monroe.army.mil, 27 February 2003, "RE: RE: NLWs Thesis . . . ," Email.

[178]Ms. Charlene Rusnak, US Navy NLWs Program Support Officer (OPNAV N757E), Charlene.rusnak@navy.mil, 25 February 2003, "RE: Joint MNS info . . . ," Email.

# CHAPTER 5

## CONCLUSIONS AND RECOMMENDATIONS

The end of the Cold War gave rise to a complex security environment resulting in a fundamental shift of focus from unrestricted warfare against a well-defined enemy towards a wide variety of military operations other than war (MOOTW) characterized by urbanized terrain, joint occupational expeditions, non-state actors, and asymmetric threats.[1] Since 1999, there was significant growth in NLWs literature as well as DTLOMS and DOTML-PFs development. DTLOMS and DOTML-PFs form the rudimentary doctrinal exploration of how the Armed Forces envision their use of NLWs above the tactical level. From the previous analysis, the principle conclusion to be drawn from this study is that service publications, such as DTLOMS, do exist that provide the US Government's or services' policies and goals of its application of NLWs.

When LtCol Joseph Perry reached the conclusion that there would be a need for a NLWs joint doctrine by 2003, he may have been putting the cart before the horse. Since joint doctrine is written to describe operations with current capabilities, it would tend not to stray into the conceptual arena that NLWs doctrine above the tactical level represents.[2] Thus, the appearance of a NLWs joint doctrine would have required an underpinning of service NLWs doctrine addressing, at a minimum, NLWs capabilities and operations at the operational level. However, since the services' operational level NLWs doctrine is still in the conceptual arena, a joint NLWs doctrine will simply not be practical for some time, if at all.

Furthermore, the development of DTLOMS and DOTML-PFs represents service doctrine in a rudimentary and basic form. Traditionally, the services have stated their needs via a conceptual doctrine that then drove the scientists to satisfy those needs.[3] The US Army's development of Deep Battle technologies proposed through its AirLand Battle doctrine is one example of this practice. Characteristic of this traditional needs-based methodology is a rudimentary doctrinal analysis as well as a conceptual development of NLWs doctrine at the operational level. The Army's Objective Force vision exemplifies this approach. Embedded into the Army's transformation documents for the Objective Force are NLWs "hooks"[4] that dictate the integration of lethal and non-lethal weapons into a true, rheostatic, scalable (lethal-to-non-lethal) effects capability for future combat systems (FCS) platforms, crew-served weapons, and individual soldiers.[5] In the end, this doctrinal vision along with other manprint requirements, will shape the future development of NLWs technologies and serve as guidelines to develop and implement desired NLWs capabilities in an efficient manner.

The study also described MOOTW, more specifically PSOs, in order to illustrate the dynamic range of potential conflict associated with operations in a complex security environment. Advances in today's media and information reporting contribute greatly to a particularly important aspect of PSOs- the intermingling of tactical, operational, and strategic levels of war--in that any single event may cut across all three levels.[6] Due to this intermingling of the levels of war, the analysis to determine which branch of the Armed Forces has developed the NLWs doctrine above the tactical level necessarily includes that service's current implementation of NLWs as well as exploration and experimentation with NLWs. The results of the analysis of each service as well as joint

implementation and exploration of NLWs have been summarized in table 2. The results show that the Marine Corps has made the most balanced development of NLWs doctrine in its current implementation and extensive exploration and experimentation above the tactical level. The Army has also been extremely active in NLWs development followed by the Joint Command, the Air Force, and the Navy.

Analysis of the ways that NLWs are applicable to operational and strategic level doctrine established that NLW capabilities that expand military options are directly linked to expressions of US strategic or operational level doctrine. The foregoing analysis cited several studies and vision documents that explicitly identified a need for non-lethal solutions to enhance the military's precision engagement capabilities when operating in a complex security environment. In addition to enhancing the military's precision engagement capabilities, analysis supports several new capabilities unique to the use of NLWs (Appendix D refers). The results of service and joint exploration and experimentation further augment the analysis of service and joint NLWs doctrine and training programs, demonstrating the applicability of NLWs to operational and strategic level requirements. The development of the *Joint Mission Need Statement for a Family of Non-Lethal Weapons*, by itself, responds to the Quadrennial Defense Review, National Defense Panel, Joint Vision 2010, Joint Vision 2020, the Concept for Future Joint Operations, as well as past and current versions of the DPG.[7]

These results further demonstrate that NLW doctrinal exploration at the operational level is the focus of nearly all of the services, with only the Marine Corps and Air Force programs exploring NLWs doctrine at the strategic level. Furthermore, the CSIS NLWs Policy Study proposed that a strategic military doctrine based on visibly

possessing viable NLWs capabilities coupled with the credible threat of its use could help US decision-makers achieve international security objectives.[8] By advocating a NLW declaratory policy, NLWs could represent a new form of crisis deterrence and help the US credibly commit forces in today's complex security environment. Such a NLW declaratory policy, "might enable the US to 'seize the moral high ground' . . . by allowing the US to deny an antagonist the use of his offensive capabilities in an unprecedentedly benign manner."[9]

As part of its conclusions, the CSIS study noted that,

> *if used carefully, and if represented correctly*, NLWs could, on balance, help bolster US credibility and therefore help it deter international crisis. *But to do so, decision-makers must recognize that NLWs are a serious use of force and therefore to be deployed with utmost care and consideration*. They violate a state's sovereignty and alter an adversary's abilities to realize objectives. They are not halfway measures.[10]

The majority of the studies, reports, and books used in support of this study consistently express essentially the same caution captured in the CSIS conclusion. To consider NLWs as halfway measures not only reduces their power and effectiveness, but would also demonstrate a severe misunderstanding of the role of NLWs and could lead to the slippery slope to war scenario.[11]

Examples that demonstrate how the role of NLWs is misunderstood are the thought that NLWs can be used as a form of warfare, or worse, that the use of NLWs represents a peace movement. Perhaps a more accurate way to characterize the NLW doctrine above the tactical level is that it is an indirect, supporting piece of lethal doctrine. NLWs, by themselves, are NOT a form of warfare. As a result, NLW doctrine is, perhaps, a misnomer. Integrating NLWs into future tactical, operational, or strategic

doctrine, is still simply tactical, operational, and strategic doctrine with a greater range of options. The Army has adopted this NLWs integration philosophy.[12] The Army's integration of NLWs with lethal force is represented by the previous discussion about the Army's first coordination draft update to its FM 19-15 *Civil Disturbances*, as well as the Objective Force concept which integrates future NLWs capabilities into key Objective Force documents. This approach suggests that the solution to operational NLW doctrine does not appear to be a joint publication on NLW doctrine. In fact, the drafters for the Joint Warfighting Center's, Joint Doctrine Series Pamphlet 2 (JDS Pamphlet 2), *Doctrinal Implications of Low Collateral Damage Capabilities* (27 January 2003) have expressed a similar opinion. If JDS Pamphlet 2 achieves its intended purpose of stimulating thought, discussion, and debate on LCDCs, instead of a new NLWs joint publication, the drafters of JDS Pamphlet 2 would look for updates to already existing joint publications as NLWs consideration become reflected in service intelligence, fires, and planning publications.[13] Examples of these joint publications include: (1) JP 5-0 (Planning); (2) JP 5-00.2 (JTF Planning Guidance and Procedures); (3) JP 3-60 (Targeting); (4) JP 2-01 (Intel Support to Military OPS), (5) JP 3-13 (Information Ops).[14]

Although the use of doctrine to drive technology is efficient in methodology and process,[15] the lead-time required to conduct the required MAA, MNA, MNS, and ORDs, in the traditional acquisition procurement process is an obstacle to the rapid development and fielding of NLWs capabilities. The Marine Corps and JNLWD, who were given the responsibility to quickly create and field NLWs capabilities to satisfy the current operational requirements of the COMCOMs, became keenly aware of this obstacle after DoDD 3000.3 designated the Marine Corps as the Executive Agent. Thus, the Marine

Corps and the JNLWD have voiced the need for allowing for a parallel, unbounded process using technology-based exploration of operational uses, in addition to the needs-based approach, to help stimulate new ideas.[16] Although the doctrinal needs-based approach is generally the rule, many of the most significant military capabilities were developed using the unbounded process.[17] Given the responsibilities that DoDD 3000.3 placed on the Marine Corps and the JNLWD, the unbounded process would be better suited to the rapid development and fielding of NLW operational requirements if appropriate resources are made available.

Although there has been a tremendous amount of *interest* in the potential advantages of the use of NLWs by American strategists and policymakers for many years, US civilian leadership has been slow to *support* efforts to develop NLWs. There has only been limited political support. Senator Pete Dominici (NM) addressed congress in support of continuing to fund directed energy NLWs back in 20 March 2001. Senator Bob Smith (NH) pushed forward $2 million toward NLWs programs annually prior to leaving office. At one point, Senator Mitch McConnel (KY) proposed the addition of the University of Kentucky to the list of NLWs research centers.[18] However, with the US on the verge of war with Iraq, top Pentagon officials began to formulate rules of engagement for combat troops to include the use of NLWs to incapacitate civilians.[19] The war with Iraq presented the likelihood that American troops could end up fighting up to one million armed Iraqi civilians in an urban environment.[20] A short time prior to Secretary of Defense Donald Rumsfeld's statement to the press about the use of NLWs in Iraq, Rumsfeld tasked Undersecretary of Defense Peter Aldridge via an internal memo to further investigate the use of NLWs.[21] This latter development is significant since this

more senior civilian level of support would tend to focus on the integration of NLWs at the policy or wider strategic level rather than at the tactical level.[22]

Although the use of NLWs can support a US deterrence posture, it is possible to envision ways that NLWs can do more harm than good when used inappropriately.[23] John B. Alexander pointed out that, "there is a fine line between causing submission of an unwilling suspect and inflicting punishment."[24] Given the intermingling of the levels of war described earlier, the training of appropriate NLWs use would be a form of strategic doctrine.[25] Therefore, one would think that NLWs training from certified INIWIC instructors would be a prerequisite for all military personnel, not only those deploying on a PSO. With the exception of the Marine Corps, the services have treated INIWIC as a course for their MPs. On the contrary, INIWIC's NLWs training curricula is just as applicable to the combat arms and combat support branches as to the MP branch. As stated by one brigade commander of US forces in Bosnia, "You've made us policymakers. And it's not just me, not just colonels, its every private with a rifle."[26] Vital to the understanding of the role of NLWs, INIWIC teaches that the non-lethal mindset is more than batons, rubber bullets, or new technology. Students come away with a profound understanding of the force continuum and how to estimate a threat and properly escalate or deescalate force.[27] However, NLWs training must extend further than the soldiers conducting operations in the complex security environment. NLWs training must also address senior military and civilian leadership, as well as education of the public in general.

Following Joseph Coates' study, there was a prolonged hiatus while proceeding full circle to address the issues apparent early on in the Vietnam War. Joseph Coates'

paper recognized the future complex security environment the US was to face in the future. “The widespread destruction and loss of life in recent low-level combat, particularly in Vietnam, suggest a partial mismatch between current capabilities and the objectives of present and future conflicts.”[28] With a decade of MOOTW operations and a new NSS proclaiming preemption of the threats posed by terrorists and rogue states, one would conclude that NLWs will have a large place in the campaigns that US forces will be expected to conduct. With the end of the Cold War a decade ago, the US may yet get around to advancing the vision offered by Joseph Coates back in 1970. This thesis has demonstrated that rudimentary doctrine for the integration of NLWs to achieve the US Government’s operational and strategic policy goals is well underway. However, advances in NLWs technology will be accompanied by vigorous debate due to actual or supposed violations of international law and, possibly, invasion of privacy.[29] Advances in NLW technology when combined with mature information operations will eventually offer an unprecedented tailoring of engagements and perceptions with a wide range of applications from force protection to homeland security. However, while perceptions play a major role in shaping the outcome of conflict, perception management involves manipulating people in ways that evoke questionable legal issues that no one wants to address.[30] Regardless, the time will come when the threat to US security by an asymmetric threat will test the legal constraints surrounding employment of NLWs in a dynamic operational environment. The real question is whether the US will be doctrinally ready to respond. Given what we see about advanced NLWs, the integration of NLWs should be considered a part of the revolution of military affairs. In order for the US to succeed in the complex security environment first glimpsed by Joseph Coates during the

Vietnam War, new NLWs along with integrated NLWs doctrine, will enable successful political-military policies in combating insurgency and irregular forces, as well as in prosecuting the Global War on Terrorism.

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[1]Metz, "NLW Progress Report," 21.

[2]JWFC Joint Doctrine Series Pamphlet 2, *Doctrinal Implications of Low Collateral Damage Capabilities*, 17.

[3]E.R. Bedard, "Non-lethal Capabilities: Realizing the Opportunities," 4.

[4]Phone conversation with Col. Timothy Lamb (25 March 2003).

[5]Col. Timothy Lamb, "Army Non-Lethal Weapons/Scalable Effects (NL/SE) Program: A Think Piece," 3.

[6]CJCS, Joint Publication 3-0, *Doctrine for Joint Operations* (1 Feb 1995), II-2.

[7]Joint Chief of Staff, Vice Chairman of the Joint Chiefs of Staff, *Family of Non-Lethal Capabilities Mission Needs Statement* (10 December 2003), 1.

[8]CSIS, "Non-Lethal Weapons Policy Study," 42.

[9]Ibid., 42.

[10]Ibid., 19.

[11]F. M. Lorenz, "Non-Lethal Force: The Slippery Slope to War?," *Parameters* (Autumn 1996), 52-62.

[12]Phone conversation with Mr. Jo Barnes (03 March 2003).

[13]Mr, Ricky Rowlett, RowlettR@jwfc.jfcom.mil, 07 March 2003, "RE: RE: NLWs doctrine . . . ," Email.

[14]Ibid.

[15]E.R. Bedard, "Non-lethal Capabilities: Realizing the Opportunities," 4.

[16]Ibid., 4.

[17] Martin L. Creveld, *Technology and War: From 2000 B.C. to the present*, (New York: Free Press, 1989), 220, cited by E.R. Bedard, "Non-lethal Capabilities: Realizing the Opportunities," 6.

[18]Phone conversation with CDR Jay Bottleson at JNLWD (14 Feb 2003).

[19]Pamela Hess, "US: 'Non-Lethal' Weapons Being Developed," *The Washington Times* (31 October 2002): Internet: http://www.washtimes.com/upi-breaking/20021030-063607-9176r.htm, accessed 12 February 2003.

[20]Ibid.

[21]Phone conversation with CDR Jay Bottleson (14 Feb 2003).

[22]Barton Reppert, "Force Without Fatalities," *Government Executive*, Vol. 33, no. 6 (May 2001), 2, quotes Steven Metz, regarding the JNLWD. "A lot of their focus is at the programmatic level rather than at the policy and strategic levels. . . . But I [Metz] think that to really get anywhere, you also need somebody at the undersecretary level . . . who is exploring integrating these into the wider strategy."

[23]CSIS, "Non-Lethal Weapons Policy Study," 19.

[24]Alexander, *Future War*, 51.

[25]CSIS, "Non-Lethal Weapons Policy Study," 19.

[26]Rick Atkinson, "Warriors Without a War--U.S. Peacekeepers in Bosnia Adjusting to New Tasks: Arbitration, Bluff, Restraint," *The Washington Post* (April 14, 1996), A1, A22, as quoted by Lieutenant Colonel Paul R. Capstick, US Army, *Non-lethal Weapons and Strategic Policy Implications for 21st Century Peace Operations*, US Army War College, 7.

[27]INIWIC homepage, Internet: http://mcdetflw.tecom.usmc.mil/INIWIC/NIOVERVIEW.asp.

[28]Coates, 105.

[29]Metz, "NLW Progress Report," 22.

[30]Alexander, *Future War*, 111.

APPENDIX A

NON-LETHAL WEAPONS: LEGAL ISSUES

Quoted from a presentation of the same title by W. Hays Parks, Special Assistant to The Judge Advocate General of the Army, Washington, D.C. This paper was prepared for and presented to the US/UK Non-Lethal Weapons/Urban Operations Wargaming Program, 20 January 2000.

Non-lethal weapons legal issues may be unique, but generally may be addressed within established parameters. My presentation will offer information regarding U.S. implementation of its legal obligations, and the potential impact of these laws on the military development, acquisition or employment of non-lethal weapons.

**Terms and definitions**

*Non-lethal weapons* are defined by Department of Defense Directive 3000.3 (July 9, 1996) as "weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment." I do not disagree with the definition, but from a legal and political perspective have personal concerns with the term or label "*non-lethal*." While it may manifest the intent of these weapons, it also may be viewed as an oxymoron. When a person dies as the result of use of a "non-lethal" weapon, as has occurred and inevitably will occur in the future, the overall program could suffer a similar credibility gap or, worse, jeopardize political support for an operation involving U.S. military forces.

The Department of Defense directive neither requires nor expects non-lethal weapons to have a zero probability of producing fatalities or permanent injuries. Rather, non-lethal weapons are intended to *significantly* reduce the probability of such fatalities or injuries when compared to traditional military weapons, while providing the military commander with greater operational flexibility in responding to threats. This nuance or disclaimer may be lost or neglected in media reports in the aftermath of an incident. Lest this seem minor, one need only consider excessive force pleadings in causes of action brought against police departments for fatalities or injuries suffered as a result of non-lethal weapon employment, or complaints brought against British security forces for use of non-lethal weapons in Northern Ireland. For this reason, I believe "less lethal" or "less-than-lethal" would be more accurate and preferable in describing the program.

**Research, Development and Acquisition**

Department of Defense Directive 3000.3 requires that a legal review be conducted of all non-lethal weapons to ensure their consistency with the obligations assumed by the United States under all applicable treaties, customary international law, and, in particular, the law of war. This policy statement is consistent with similar statements in other

Department of Defense directives and a long-standing Department of Defense program for legal reviews of all new weapons and munitions.[1]

The U.S. instituted its weapons legal review program following the Viet Nam War, in reaction to claims made in the course of that conflict that some of its new weapons--such as cluster munitions, flechettes, and the 5.56x45mm M-16 rifle--were "illegal." The 1978-1980 conference that promulgated the 1980 United Nations Conventional Weapons Convention (UNCCW) established conclusively that these claims were false. Adoption of the U.S.-developed weapons further validated the lawfulness of U.S. Viet Nam era weapons developments. An example is NATO's 1980 approval of the 5.56x45mm cartridge, followed by fielding by NATO nations of rifles in that caliber, such as the British L85A1, and development and fielding of other, similar small-caliber weapons, such as the Russian 5.45x39mm AK-74 and Chinese 5.8x42mm Type 95.

The U.S. weapons legal review program is very pro-active, robust and forward leaning for at least three reasons. First is the long-standing policy of U.S. forces of adhering to the rule of law. Second is the desire to assure military commanders that the weapons issued are lawful. Third, experience has proven that challenges to the legality of a new weapon are not always altruistic. When a challenge is offered, a legal review in hand informs and assists the leadership in responding to the challenge.[2]

A weapon review is based upon arms control agreements and law of war treaties to which the United States is a State Party, customary international law, and U.S. policy. Responsibility for conducting a legal review is assigned to the Judge Advocate General of the military department with primary responsibility for the weapon's or munition's development and acquisition. Where more than one military department is acquiring the weapon, or where the weapon or munition presents an issue that may have potential

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[1]Department of Defense Directive 5000.1 (15 March 1996), Subject: Defense Acquisition, Paragraph D(2)(j). A separate but complementary obligation exists in Department of Defense Directive 2060.1 (31 July 1992), Subject: Implementation of, and Compliance with, Arms Control Agreements, which assigns to the Under Secretary of Defense (Acquisition), in coordination with the General Counsel of the Department of Defense, responsibility to oversee implementation planning and execution throughout the Department of Defense to ensure that all DoD agencies certify, as necessary, that specific activities are in compliance with arms control agreements to which the United States is a party.

[2]In part due to the success of the U.S. weapon legal review program, the Diplomatic Conference of governments that met in Geneva from 1974 to 1977 adopted as Article 36 of the 1977 Protocol I Additional to the 1949 Geneva Conventions a requirement that all States Parties to that treaty establish a similar weapon legal review program. This obligation has not met with great success. Although there are 155 States Parties to this treaty (the United States is not), fewer than ten States Parties have established legal review programs for new weapons.

impact on more than one military department, a draft legal review is prepared by the primary office, coordinated with its counterpart offices and, if appropriate, the General Counsel, Department of Defense, and the Legal Adviser, Department of State.

Legal reviews of non-lethal weapons to date have paralleled Department of Defense focus on non-lethal weapon systems designed primarily for employment at the tactical level. These include antipersonnel (crowd control, incapacitation and area denial) and anti-materiel (area denial and barrier) weapons. The fundamental test for evaluation of weapons is contained in the Hague Convention (IV) Respecting the Laws and Customs of War on Land of 18 October 1907 (36 Stat. 2277, TS 539, 1 Bevans 631). Article 23(e) of its Annexed Regulations prohibits the employment of "arms, projectiles, or material calculated to cause unnecessary suffering." The scope of this treaty is limited to international armed conflict. However, inasmuch as the military generally cannot afford two sets of weapons for operations across the conflict spectrum--one for international armed conflict, and one for all other operations--application of the standard contained in article 23(e) is useful.

The prohibition of *unnecessary suffering* constitutes acknowledgement that *necessary suffering* to enemy combatants is lawful, and may include severe injury or loss of life. There is no agreed definition for *unnecessary suffering*. Whether a weapon or munition causes unnecessary suffering is ascertained by determining whether the injury (including death) to combatants is manifestly disproportionate to its stated purpose(s), that is, its intended use(s), and the military advantage to be gained from its use. This balancing test cannot be conducted in isolation. A weapon or munition which in practice is found *inevitably* to cause injury or suffering manifestly disproportionate to its military effectiveness would contravene the prohibition. A weapon's or munition's effects must be weighed in light of comparable, lawful weapons or munitions in use on the modern battlefield. As the intent of non-lethal weapons is to *significantly* reduce the probability of fatalities or injuries to targeted threats when compared to traditional military weapons, non-lethal weapons tend to be well below this threshold. However, because targeted threats may use innocent civilians (a group protected from intentional attack so long as they are not taking an active part in hostilities) as human shields, potential bio-medical and other deleterious effects of non-lethal weapons must be considered in a legal review.

Even if a weapon does not cause unnecessary suffering, the legal review must determine whether other law of war treaties are applicable. For example, the Modular Crowd Control Munition, reviewed and approved in 1998, is a non-lethal munition that utilizes a housing similar in appearance to the M18 Claymore antipersonnel weapon. It provides a similar capability to affect area personnel targets, employing approximately six hundred caliber .32 rubber balls contained in durable rubber casing rather than the steel balls found in the M18 Claymore. Upon initiation, the explosive will propel the balls at a very low velocity in the aimed direction at a cone angle of approximately sixty to seventy degrees. The injury mechanism, kinetic energy only, dissipates rapidly. Because of the remote possibility that at close range its projectiles might penetrate unclothed skin, consideration had to be given to Protocol I of the UNCCW, which prohibits "any weapon

the primary effect of which is to injure by fragments which in the human body escape detection by x-rays." Each projectile was implanted with five per cent Barium Sulfate to permit its detection by x-ray in order to comply with Protocol I.

The United States ratified the Amended Mines Protocol to the UNCCW on 24 May 1999. The protocol's intent is to address the indiscriminate effect of irresponsible use of anti-personnel land mines in conflicts in less-developed nations through increased protections for the civilian population and individual civilians not taking an active part in hostilities. In ratifying the protocol, the United States declared that "nothing in the . . . protocol may be construed as restricting or affecting in any way non-lethal weapon technology that is designed to temporarily disable, stun, signal the presence of a person, or operate in any other fashion, but not to cause permanent incapacity."

That being said, non-lethal weapons may not be used in a manner that otherwise would be illegal. Were a soldier engaged in a peacekeeping operation to fire a rubber bullet, bean bag or baton round at a three-year-old child or other civilian who posed no threat, that soldier would be subject to discipline for assault and/or disobedience of his rules of engagement. The rules that apply with respect to application of lethal force in many respects will continue to apply for non-lethal weapons, notwithstanding the U.S. statement of understanding to the Amended Mines Protocol. Thus one may not field an anti-personnel mine using less-lethal projectiles without some concept as to how it would be employed so as to protect innocent civilians from injury. The rules contained in the Amended Mines Protocol will be useful in developing employment standards.

Arms control treaties, such as the 1972 Biological Weapons Convention (BWC)[3] and the 1993 Chemical Weapons Convention (CWC)[4] are considered, as are treaties relating to protection of the environment, such as the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques.[5] A complaint has been voiced by one proponent of non-lethal weapons that "virtually all the treaties and agreements that govern the conduct of weapons of war pre-date non-lethal devices, and are hence outmoded. International laws, treaties, and national policies and customs may serve as guidelines, but completely adequate criteria have never been crafted."[6] In response, the non-lethal weapons community has had to learn that treaties are more than "guidelines," and are binding on all weapons, whether lethal or non-lethal. Just as less-lethal weapons may not be regarded as a panacea, so, too, must it be

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[3]Convention on the Prohibition of Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction of 10 April 1972 (26 UST 583, T.I.A.S. 8062, 1015 UNTS 163).

[4]Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and Their Destruction of 13 January 1993.

[5]31 UST 333, TIAS 9614 (18 May 1977).

[6]Charles Heal, "Making, not breaking, the rules," *Jane's International Defense Review* (9/1997), 77, at 79.

appreciated that less-lethal weapons are not a "way around" treaty obligations of our governments.

The BWC and CWC are comprehensive bans on the development, production, acquisition, stockpiling, retention or use of either.[7] Under U.S. domestic law, any individual who knowingly develops, produces, stockpiles, transfers, acquires, retains or possesses any biological agent, toxin or delivery system,[8] or develops, produces, acquires, transfers, receives, stockpiles, owns, possesses, uses, or threatens to use any chemical weapon,[9] has committed a federal crime punishable by imprisonment. Hence any person who regards these treaties as "outmoded guidelines"--an incorrect description, inasmuch as the United States became a party to the Chemical Weapons Convention in 1997, *after* establishment of the Department of Defense non-lethal weapons program--does so to his or her peril.

At the same time, each of these treaties must be read carefully to understand what it prohibits. For example, the Chemical Weapons Convention prohibits the use of riot control agents as a "method of warfare." It does not prohibit their possession or their use in domestic law enforcement or military operations other than war. Similarly, the Blinding Laser Weapon Protocol (Protocol IV) to the United Nations Convention prohibits "laser weapons specifically designed . . . to cause permanent blindness to unenhanced vision. . . ." It was not intended to prohibit use of tactical lasers, such as range finders or target designators, even though their use may result in some blinding, nor lower-powered laser devices that merely dazzle but do not cause permanent blindness.[10]

Knowledge of a proposed non-lethal weapon is necessary to determine whether or not it is consistent with these treaties. For example, presentations offered at other conferences have discussed the possibility of chemical super-acid aerosols, super-friction compositions, or embrittling agents as anti-materiel weapons, or chemical rubber decomposition agents to attack vehicle tires, fuel gelling agents, filter clogging polymers, surface polymer agents, or combustion inhibition agents for anti-materiel purposes.

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[7]The Biological Weapons Convention prohibits biological weapon use inferentially by prohibiting their development, production, acquisition, stockpiling, or retention; one cannot use that which is prohibited to possess. The Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare of 17 June 1925 (26 UST 571, T.I.A.S. 8061, 94 LNTS 65) prohibits use of biological (bacteriological) weapons. The Chemical Weapons Convention prohibits development, production, acquisition, stockpiling, retention or use of chemical weapons, as well as military preparation for their use.

[8]18 U.S. Code, § 175.

[9]18 U.S. Code, § 229.

[10]The legislative history of the Blinding Laser Weapon Protocol is contained in the author's "*Travaux Preparatoires* and Legal Analysis of Blinding Laser Weapons Protocol," *The Army Lawyer* (June 1997).

Whether each is consistent with the Chemical Weapons Convention (CWC) will depend upon its composition and effect.

The CWC defines "chemical weapons" as "toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention," and "munitions and devices, specifically designed to cause death or other harm through the toxic properties of . . . [these] toxic chemicals . . . which would be released as a result of the employment of such munitions and devices." A "toxic chemical" is defined as "any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans and animals. . . ." The CWC contains a comprehensive schedule (list) of chemicals whose *possession* is prohibited. The convention relies upon consultation, cooperation, fact-finding and an aggressive challenge and inspection program for verification. The CWC does not prohibit military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare, nor domestic law enforcement use (such as riot control agents).

In considering a possible anti-materiel chemical agent one first must look at the convention's schedule to determine whether a particular chemical is expressly prohibited. If it is not, the effects of the proposed agent must be considered. If its effects on humans meets the definitions quoted above, even if ancillary to its intended anti-materiel purpose, the agent would be prohibited. These are roads the international community, including our governments, decided should be closed permanently, whether the intended weapon is lethal or non-lethal.

Emerging technologies, such as directed energy, may provide non-lethal weapons possibilities. Department of Defense Directive 5000.1 encourages legal reviews of new, advanced or emerging technologies which may lead to development of weapons or weapons systems.

One final comment must be made with regard to the legal review process, and that concerns the information necessary for a legal review. The legal review must consider not only intended effects, but also likely effects. Bio-medical effects information often is essential to the legal review of a weapon or munition. While somewhat beyond the scope of my presentation, legal and policy limitations[11] on human testing do have a potential limiting effect on the information that can be obtained about a non-lethal weapon or munition. Prior to deployment to Somalia in 1993, one U.S. Army unit was issued non-lethal hand grenades containing rubber fragments that would 'sting' on impact. Some members of the unit, clad only in shorts, formed a close circle, facing outboard, as one member pulled the pin on a grenade and tossed it into the circle, in order to determine the weapon's potential range and effect. Initially unimpressed, the circle grew tighter and

[11]10 United States Code, § 980, and Department of Defense Directive 3216.2 (January 7, 1983), Subject: Protection of Human Subjects in DoD-Supported Research.

tighter until it reached the point where some discomfort was felt. This informal testing was neither scientific, empirical, nor authorized, but undoubtedly necessary to provide fielded forces some confidence in the weapons provided them. Where human use testing of non-lethal weapons is necessary, policy limitations on human use testing can be met by complying with Department of Defense requirements for establishing a protocol. But a distinction should be made between established safeguards and an inconvenience to contractors or program managers for their non-lethal weapons projects. Where human use testing proves difficult, modeling poses a possible alternative.

**Employment of non-lethal weapons**

Two factors are considered in the employment of non-lethal weapons. The first concerns treaty or policy restrictions on employment; the second deals with their employment as such.

An example of the first is Executive Order 11850.[12] It states that U.S. military forces may not employ riot control agents (RCA) without prior Presidential approval. It also provides examples where RCA employment may be authorized. Although the CWC prohibits the use of riot control agents as a "method of warfare," Executive Order 11850 remains in effect, and RCA deployment remains subject to advanced Presidential approval. (A long-standing mechanism exists for obtaining authorization.) This affects any riot control agent, including the new, commonly used oleoresin capsicum (pepper spray), although individual canisters for personal self defense clearly should not be regarded as having reached the threshold for a "method of warfare."

The second aspect of employment of non-lethal weapons concerns *when* they may be employed, and *how*. This requires special training, both of commanders, units and individuals. It may require assignment and training of designated personnel. In some U.S. police departments, for example, impact munitions may be fired only by a police officer trained and certified in their use.

Unit training is necessary for at least two reasons. First is to properly integrate non-lethal weapons into the unit's "kit bag," in order to maximize their effectiveness. Second is to appreciate the limitations of non-lethal weapons to avoid the phenomenon known as the 'revenge effect,' a negative occurrence the weapon is intended to prevent. In a 1997 U.S. law enforcement incident, a police officer called to a barricade situation stepped from his protected position after the suspect was shot by two high-energy baton rounds. The suspect shot and killed the exposed police officer. In review, the department concluded that use of a non-lethal weapon may have lured the dead officer into a false sense of security that he would not have had had non-lethal weapons not been employed, causing him to leave his covered position prematurely.

[12] 40 Fed. Reg. 16187 (1975).

Individual training is necessary at two levels. A soldier armed with a direct-fire, impact munition must be trained in its proper employment to reduce risk of serious injury or death, for example, or to ensure that he or she has loaded the correct munition. In another recent incident, a police officer mistakenly loaded a rigid direct-fire munition instead of flexible impact munition, and killed the suspect when he shot him in the chest. Training must emphasize to all soldiers Department of Defense policy that forces armed with non-lethal weapons clearly maintain the right and responsibility to employ deadly force when necessary for individual and unit protection in the face of hostile acts or intent. In an incident in Somalia, three soldiers riding in an open vehicle stopped in traffic. When the female soldier in the vehicle was attacked by a man with a knife, her two male companions resorted to their canisters of pepper spray rather than using deadly force. This was a failure of training in proper employment of weapons rather than of non-lethal weapons as such.

Finally, non-lethal weapon employment will depend upon rules of engagement. *Rules of engagement* are "directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered."[13] A commander developing his rules of engagement must consider his mission, mission accomplishment, and force protection. At the lower end of the conflict spectrum, operating in unit or individual self-defense, his rules of engagement will bear resemblance to rules for use of deadly force common to law enforcement. As the threat or conflict level increases, so, too, will the rules of engagement change more to those used in conventional armed conflict. The key is unit and individual training. Military lawyers play roles in advising commanders, drafting rules of engagement, and training forces in their application.

Some non-lethal weapon advocates have looked at recent U.S. military deployments (such as peace operations) as a 'new' form of conflict, where civilians are intermingled with enemy combatants, or where there is no identified or identifiable enemy combatant force. This is a very short view of history, as the issues are the same as U.S. forces faced in counterinsurgency operations in Viet Nam and your forces faced in aid to the civil power operations in Northern Ireland. The issue to the commander and the individual soldier is not whether or not they face combatants in the traditional sense of the term, but whether the person facing them poses a threat that justifies resort to force. The difference is that non-lethal weapons provide the military commander alternative, less-lethal measures that may be used to respond to a threat. Non-lethal weapons may not be the correct choice in all cases. They always should be seen as complementary to rather than as a substitute for conventional weapons.

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[13]Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms (23 March 1994).

INTERNATIONAL TREATIES AND SANCTIONS AFFECTING
THE USE OF NON-LETHAL WEAPONS

Hague Convention No. IV,18 October 1907, Respecting the Laws and Customs of War on Land, T.S. 539, including the regulations thereto.

Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug 12 1949 (GWS)

Geneva Convention for the Amelioration of the Condition of the Wounded, Sick, and Shipwrecked Members, Aug 121949 (GWSS)

Geneva Convention Relative to the Treatment of Prisoners of War, Aug 12 1949 (GPW)

The 1977 Protocols Additional to the Geneva Conventions, Dec. 12 1977, 16 ILM 1391, DA Pam 27-1-1 [hereinafter GPI & II – NOT ratified by US, but most provisions viewed as expressions of Customary International Law. See list on p. 11 of Operational Law Handbook for CIL and our specific objections].

Protocol for the Prohibition on the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare, Jun 17 1925 (26 UST 571,94 LNTS 65) [hereinafter 1925 Geneva Protocol]

Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, January 13, 1993,32 ILM 800 [hereinafter CWC]

Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, April 10, 1972, 26 UST 583 [hereinafter 1972 Biological Weapons Convention]

Convention on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Oct. 10 1980 [1980 CCW]

- This treaty has four protocols:
  - Protocol I, non detectable fragments
  - Protocol II, mines, booby traps, and other devices
  - Protocol III, incendiaries
  - Protocol IV, laser weapons

**1 .** Treaty Number: 105-1(B) **Transmitted:** January 07, 1997
INCENDIARY WEAPONS PROTCOL AND PROTOCOL ON BLINDING LASER WEAPONS

**Type:** Arms Control

**Latest Action:** January 07, 1997 - Received in the Senate and referred to the Committee on Foreign Relations by unanimous consent.

**2 .** Treaty Number: 105-1(A) **Transmitted:** January 07, 1997
AMENDED MINES PROTOCOL

**Type:** Arms Control

**Latest Action:** May 20, 1999 - Resolution of advice and consent to ratification agreed to in Senate by Division vote.

**3 .** Treaty Number: 105-1 **Transmitted:** January 07, 1997
PROTOCOLS TO THE 1980 CONVENTIONAL WEAPONS CONVENTION

**Type:** Arms Control

**Latest Action:** March 23, 1999 - Committee on Foreign Relations. Ordered to be reported without amendment favorably. With one reservation, nine understandings and thirteen conditions.

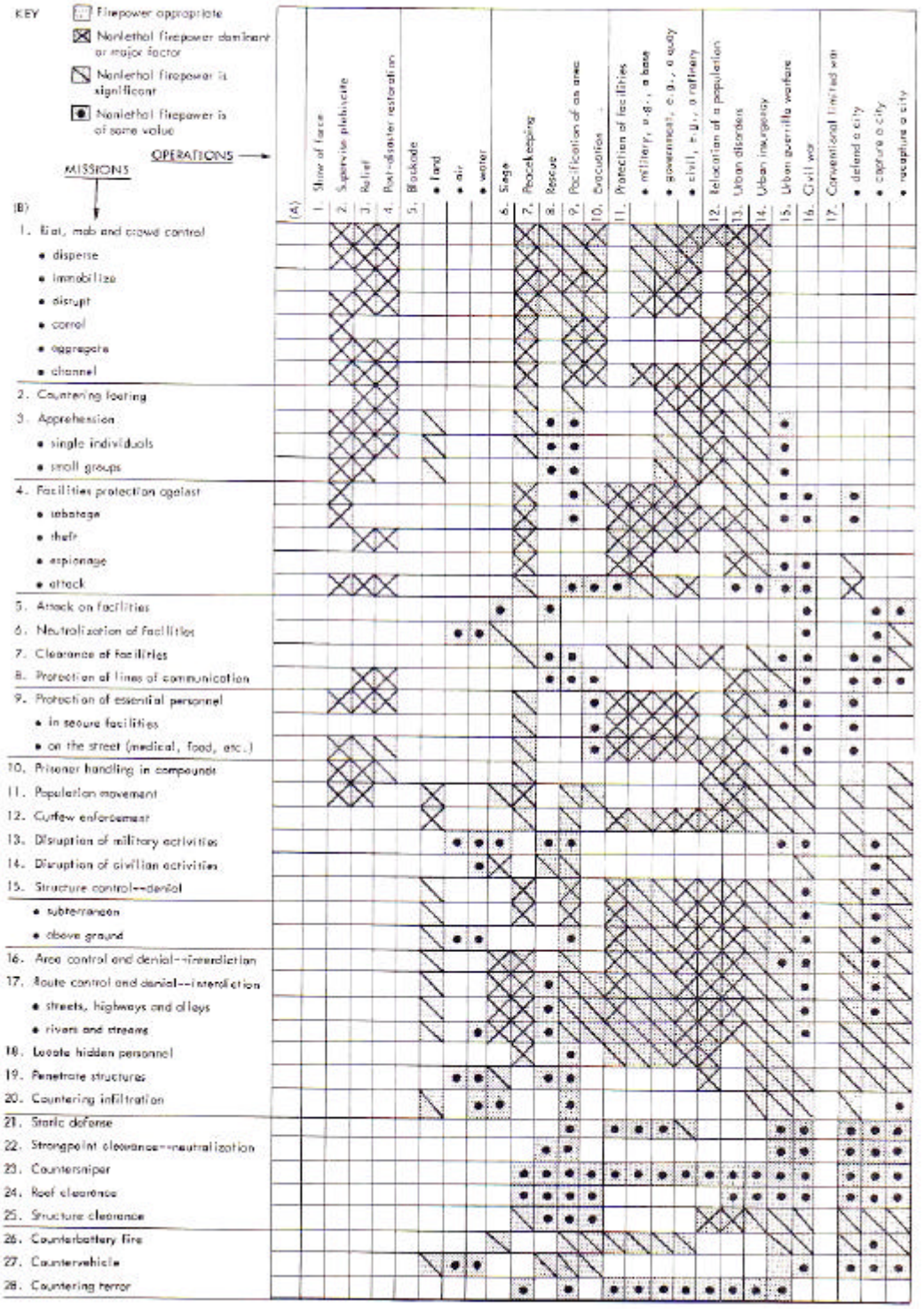
**4 .** Treaty Number: 103-25 **Transmitted:** May 12, 1994
CONVENTION ON PROHIBITIONS OR RESTRICTIONS ON THE USE OF CERTAIN CONVENTIONAL WEAPONS

**Type:** Arms Control **Countries/Parties:** multilateral

**Latest Action:** March 24, 1995 - Resolution of advice and consent to ratification agreed to in Senate by Division vote.

APPENDIX B

TABLE 4. FIREPOWER MISSIONS IN RELATION TO VARIOUS OPERATIONS



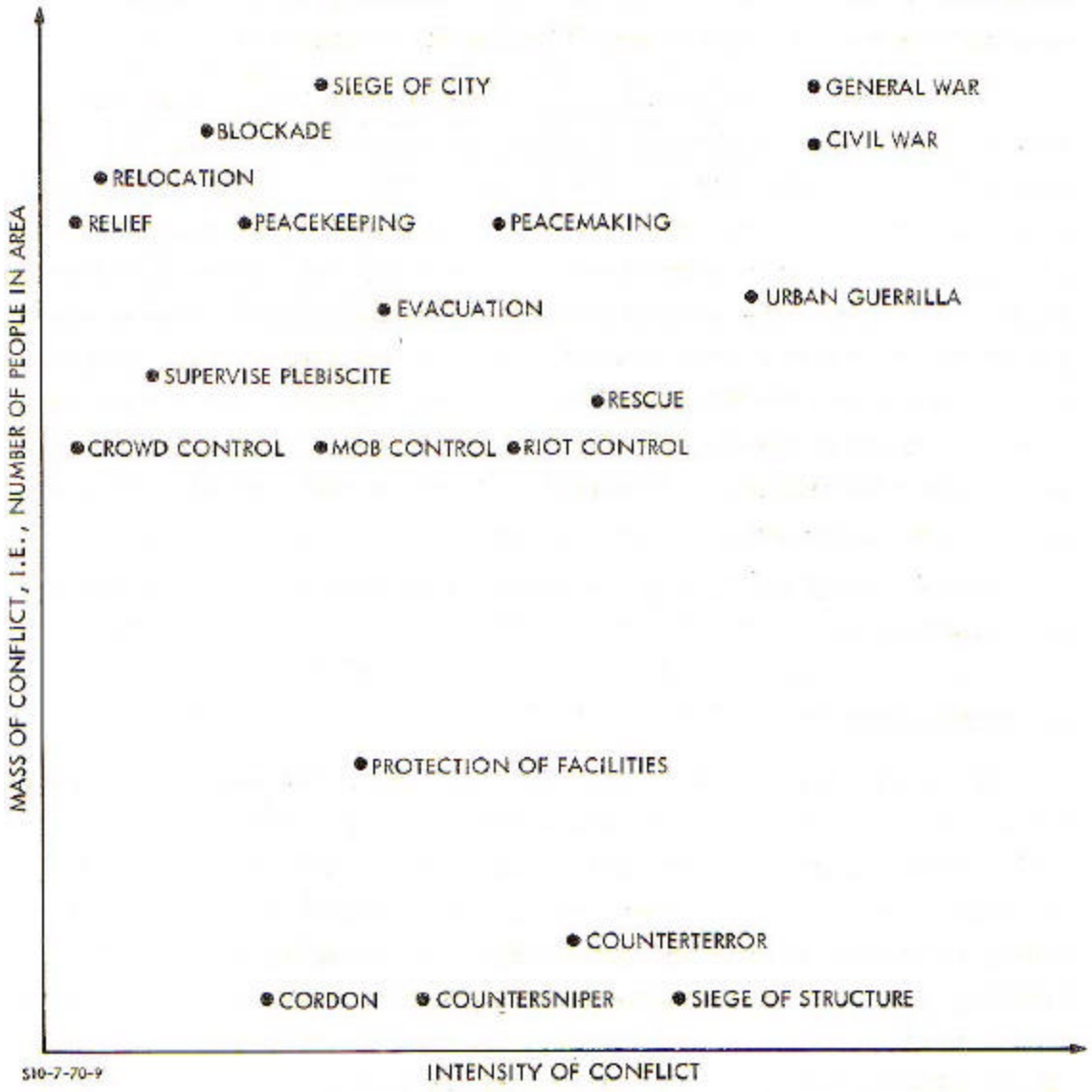



FIGURE 2. Mass and intensity of city conflict

APPENDIX C

MAJOR STUDIES OR CONFERENCES SINCE 1996

Modified from, An Assessment of Non-Lethal Weapons Science and Technology, Naval Studies Board, 69-72.

| | |
|---|---|
| 1993-2000 | Non-Lethal Defense Conference I through Conference IV. |
| 1995 | *Non-Lethal Technologies Independent Task Force Report*, Council on Foreign Relations. |
| 1996 | The Institute for Foreign Policy analysis, *Non Lethal Weapons, Emerging Requirements for Security Strategy* (May 1996) |
| 1998 | *Non-Lethal Technologies: Progress and Prospects*, Council on Foreign Relations. |
| 1999 | *Non-Lethal Weapons Policy Study*, Center for Strategic and International Studies (5 Feb 1999). |
| 1999 | Joint Mission Area Analysis Conference, sponsored by USMC and JNLWD (23 Dec 1999) |
| 1999 | *Technology Options to Leverage Aerospace Power in Operations Other Than Conventional War*, Air Force Scientific Advisory Board (Summer, 1999). |
| 2000-2001 | United States/United Kingdom War Games. |
| 2002 | Exercise Unified Endeavor 01-3, US Southern Command |
| 2002 | *An Assessment of Non-Lethal Weapons Science and Technology*, Committee for an Assessment of Non-Lethal Weapons and the Naval Studies Board (National Academy of Science, 2003). |

Papers, conference proceedings, and studies of NLWs have continued unabated since the JNLWD was created. A few of these are highlighted below in chronological order.

Council on Foreign Relations

The creation of the JNLWD has been viewed by some as a direct result of the Council on Foreign Relations study in 1995, described in Section 1.2.[1] In 1998, the CFR conducted a second study of NLWs aimed at a review of what had transpired since an official policy was written and formally adopted and the JNLWD was formed. The principal findings of the study and subsequent actions were as follows:

The report stated that there was a "high probability of major benefit from a large, urgent investment in non-lethal weapons and technologies." However, the JNLWD budget has not had any substantial increase.

• The CFR also proposed that the JNLWD should "coordinate additional NLW programs within the Services." While coordination by the JNLWD has occurred, no significant independent non-lethal weapons development by the Services has taken place.

• The CFR suggested that cognizance for NLWs should be at the National Security Council (NSC) level in order to provide NLWs a higher level of importance and visibility within the administration. NSC attention to NLWs has been limited.

## Non-Lethal Defense Conference IV

In March 2000 the National Defense Industrial Association hosted the Non-Lethal Defense Conference IV (NLD IV) co-sponsored by JNLWD, NU, and others. More than 400 people attended—more than any in this series since NLD L in 1993. NLD IV was the first conference held after the establishment of DOD policy on NLWs, formation of the JNLWD, and line item budgeting for these systems in the defense budget. The most significant change was in the attendance of representatives from major defense industries. Industrial attendees in previous sessions had been largely from small businesses that produced specific NLWs. NLD IV provided an overview of the status of NLWs and research.

## United States/United Kingdom War Games

During 2000, a series of non-lethal weapons meetings and war games was conducted jointly with U.S. and United Kingdom units, facilitated by the JNLWD. The intent was to identify policy, requirements, and concepts of operations for NLWs. It was determined that NLWs had applicability across the spectrum, from operations other than war to major theater war. The recommendations were to field proven systems, educate the public about NLWs, develop training programs and establish logistic support, and work on organizational plans for use of NLWs. It appears that some effort has gone toward addressing those recommendations. It is too early to determine how effective the responses will be.

## Center for Strategic and International Studies

The Center for Strategic and International Studies (CSIS) conducted a study on non-lethal weapons national policy in 1999. It concluded that NLWs, if technically viable, would be extremely useful as instruments of national policy, and it recommended that the DOD executive agent undertake an expanded S&T program to determine the technical viability of many non-lethal weapons concepts. The report estimated that the level of effort required to address issues identified in the study for the leading technologies would be $100 million per year for 3 years.

## Joint Mission Area Analysis Conference

On December 23,1999, the Commandant of the Marine Corps and executive agent for the joint non-lethal weapons program requested that a joint mission area analysis be conducted. The Joint Requirements Oversight Council (JROC) endorsed the conduct of the NLW JMAA

on March 6, 2000. The initial JMAA Warfighters Conference was held in Washington, D.C., on March 27-31, 2000. The JMAA In-Progress Review was held July 18-20, 2000. The final JMAA Conference was held at Headquarters, U.S. Southern Command, October 17-20, 2000. The following findings and conclusions were produced:

- The joint non-lethal weapons program is stable and visionary.
- The joint non-lethal weapons program recognizes the potential of NLWs across the spectrum of conflict and at all levels of war.
- Using a "strategy to task" methodology, the JMAA called out capability deficiencies, identified operational and support tasks needed to meet mission objectives, and provided a master list of non-lethal weapons technologies.
- CINCs and Services JMAA working-group members concurred with respect to three core capabilities and eight subordinate functional areas for NLWs (see Box 2.2).
- JMAA working-group members reviewed and concurred with findings and recommendations of the JMAA and draft mission needs statement.
- JMAA working-group members supported the draft of a capstone requirement document for each non-lethal weapons functional area, as appropriate.

## Air Force Scientific Advisory Board

During 1999, the U.S. Air Force charged its Scientific Advisory Board (SAB) with conducting a summer study, titled "Technology Options to Leverage Aerospace Power in Operations Other Than Conventional War,"[2] in which NLWs were one of the areas examined. As part of the study, an extensive survey of technologies that could be employed in current and future systems was under-taken. It was determined that NLWs did have applicability across the spectrum of conflict and that they would enhance warfighting capability, but that a comprehensive strategy for the Air Force was needed. Non-lethal resources, the study said, should be a part of the campaign planning process as an integrated option. The need for a comprehensive Air Force acquisition strategy to develop, test, and procure NLWs was identified. In addition, the SAB recommended that the Air Force do the following:

- Develop capabilities to assess, in real time, the effects of applied non-lethal means on adversaries for planning and operations;
- Expand the use of non-lethal resources to the full spectrum of conflict during participation in warfighting experiments and exercises; and
- Undertake selected technology initiatives in high-power microwave systems, lasers, and other forms of electronic and information warfare.

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[1]Malcolm H. Weiner, *Report of an Independent Task Force on Non-Lethal Technologies: Military Options and Implications,* Council on Foreign Relations, (New York, 1995).

[2]Air Force Scientific Advisory Board. "Technology Options to Leverage Aerospace Power in Operations Other Than Conventional War," Air Force Scientific Advisory Board, SAB-TR-99-01, T. McMahan, chair, (February, 2000).

## APPENDIX D

## NEW CAPABILITIES AVAILABLE THROUGH THE USE OF NLWS

Quoted from CSIS NLW Policy Study, 48-49.

**(1) Identify the enemy as the national leadership rather than the general populace**. The US often seeks to contain hostile regimes while working to undermine their popular support.

**(2) Achieve limited objectives. Frequently the US enters a conflict with limited objectives**. The cost of using lethal force (and the attendant risks of civilian casualties and property damage and escalation) often outweighs the initial US interest in the conflict. NLWs lower the costs of action. 'pricing' regional conflicts back within the range of acceptable costs.

**(3) Preserve the stability of the status quo**. The instability created by the use of force is often a deterrent to US action. Although the US is eager to keep crises from escalating out of control, Washington is equally reluctant in many cases to see one party to a regional dispute gain a decisive advantage. Put more simply, General Edward C. "Shy" Meyer, former US Army Chief of Staff, advocates that non-lethal alternatives make it easier to retreat from the "Death Barrier" that, once crossed, prevents the return to the status quo.[1]

**(4) Respond to ambiguous situations**. Frequently, inadequate information exists about the intentions or even military nature of a potentially hostile target. NLWs can alleviate some of the costs of a 'shoot first, ask questions later' approach permitting a greater range of action.

**(5) Meet alliance concerns**. Although the US maintains the freedom to act unilaterally, Washington has increasingly come to rely on international coalitions to bolster achievement of its national security objectives. NLWs may help assuage concerns about the effects of military action, strengthening the alliance system.

**(6) Act preemptively**. Although in many cases pre-emptive action makes the most sense from a military standpoint, the US is also loath to resort to lethal force until all other remedies have been exhausted. NLWs are congruent with a policy that seeks to permit the US to take military action early in a conflict, while maintaining open channels of diplomatic and other dialogue.

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[1]Alexander, *Future War*, 177.

# APPENDIX E

## U.S. MARINE CORPS NON-LETHAL WEAPONS EXPERIMENTATION

Quoted from Naval Studies Board, *An Assessment of Non-Lethal Weapons Science and Technology*, 54-55.

| Project | Experiment Description | Summary Results |
|---|---|---|
| Black Hawk Down Study | In December 1998 the Marine Corps Warfighting laboratory (MCWL) conducted a limited-objective experiment (LOE) regarding the tactics, techniques, and procedures considering two applications of non-lethal directed-energy weapons (DEWs). | Forces using a DEW must ensure that the DEW itself is well protected. If mounted on a vehicle, the DEW should be usable while the vehicle is in motion. A "dazzle" weapon did not appear to be useful in the context of this experiment. The "penetrator DEW" could be a powerful weapon. |
| Perception Study | Conducted at the Quantico MOUT facility in August 1998 Assessed three progressive non-lethal scenarios representing squadron patrols in an urban area. All the NLWs were concepts ( not mature technologies), including a DEW capable of penetrating buildings and incapacitating the occupants, a countersniper system that could pinpoint the direction from which a sniper was shooting, and a non-lethal barrier that would cause discomfort as individuals approached that and eventually incapacitated anyone who attempted to cross it. In addition to the weapons and the squad, "minder" teams were used to recover, sort, and provide medical attention to people incapacitated by the DEW. | |
| Emerald Express | Conducted in May 1999 at the Marine Corps Research Center; addressed refinements to Humanitarian Assistance and Disaster Relief Assessments and issues and policy implications attendant upon the use of a dazzling laser NLW. | Made recommendations for follow-on efforts, including Battlefield optical surveillance system (BOSS), which is a mature technology, in use today aboard many ships; will be introduced as part of the AT/FP recommendations. |
| Small Unit Leaders Non-Lethal Trainer (SULNT) | Initiated by MCWL October 1996. Simulates peacekeeping scenarios in a three-dimensional virtual environment for teaching small-unit leader decision-making skills. Models civilian crowd behavior and the effects of lethal and non-lethal munitions employed by the U.S. Marine Corps. | Reinforces doctrine, rules of engagement, and other U.S. Marine Corps training. |
| United States/United Kingdom Non-Lethal/ Urban Operations Wargaming Program | Exercise goals were to identify key policy issues regarding the use of NLWs, identify promising near-term non-lethal systems, identify future NLW requirements, determine employment options across different levels of war and in different scenarios (MOUT), develop concept fo employment in combination with other lethal and non-lethal systems; refine NLW "Core Capabilities" (2000). | Key findings: Procure available, "proven" systems for operating forces; identify and work on promising advanced technologies; conduct experimentation and testing, modeling, and simulation; and introduce a limited number of new systems. |
| Project Lincolnia | Took place in 2000 to 2001. Objective was to determine whether a hypothetical non-lethal directed-energy barrier system (NLDEWS) could reduce casualties in the MOUT environment. The system would have two applications: (1) suppress enemy fire and (2) deny an area- such as a feeding station or evacuation site- to combative crowds. | Significant potential reduction in casualties for both "blue" and "red" forces in scenarios run. Some uncertainty in simulating use of the technology. |
| Miscellaneous modeling | Marine Corps Systems Command non-lethal rigid foam (NLRF) program: MCWL conducted NLRF limited technology assessment (LTA) in October 1997 (Urban Warrior) and LTA in May 2000.<br>MCWL supported phase I (February 1999) and II (November 1999) U.S. Air Force VMADS Program.<br>MCWL supported Center for Emerging Threats and Opportunities (CETO) LTA in January 2001 with a simulated non-lethal VMADS with USMC Operational Command. | Approved at the program definition risk reduction phase: IOC scheduled for FY02 |
| Miscellaneous Programs: mobility denial, portable vehicle-arresting barrier (PVAB), capability sets, hasty barriers | Experimentation with various technologies. | Led to training with capability sets, nail gun for securing facilities, PVAB use, other. |

# GLOSSARY

Area Denial. To deny or render an area unexploitable to other groups or forces.

Collateral Damage. Incidental damages as a consequence of military operations that is beyond the necessary damage to accomplish a desired effect to meet military objectives or accomplish a mission.[1]

Counter-Personnel Capabilities. Non-lethal counter-personnel capabilities allow the application of military force to accomplish a mission with reduced risk of fatalities or serious casualties among noncombatants- or even, in some instances, among enemy forces.[2]

Counter-Materiel Capabilities. Non-lethal counter-materiel capabilities would enhance U.S. operations by reducing or eliminating the enemy's ability to use his equipment.[3]

Deterrence. The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction.[4]

Doctrine. Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.[5]

Joint Doctrine. Fundamental principles that guide the employment of forces of two or more Military Departments in coordinated action toward a common objective. It is authoritative; as such, joint doctrine will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. It will be promulgated by or for the Chairman of the Joint Chiefs of Staff, in coordination with the combatant commands and Services.[6]

Multi-Service Doctrine. Fundamental principles that guide the employment of forces of two or more Services in coordinated action toward a common objective. It is ratified by two or more Services, and is promulgated in multi-Service publications that identify the participating Services.[7]

Non-lethal. Not made to cause death; not intentionally deadly; a term used broadly to describe capabilities that affect targets, temporarily or permanently, without intentionally causing death to personnel or without unnecessary destruction or environmental damage.[8]

Non-lethal capabilities. Capabilities employed with the intent to compel or deter adversaries by acting on human capabilities or materiel while minimizing killing

and destruction of equipment or facilities.[9]

Non-lethal weapons. Weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment. Unlike conventional lethal weapons that destroy their targets through blast, penetration, and fragmentation, NLWs employ means other than gross physical destruction to prevent the target from functioning. Non-lethal weapons are intended to have one, or both, of the following characteristics: (1) They have relatively reversible effects on personnel or materiel. (2) They affect objects differently within their area of influence.[10]

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[1]TRADOC Pam 525-73, 11.

[2]Joint Concept for NLWs (Core capabilities), 9.

[3]Ibid.

[4]CJCS, Joint Publication 1-02, *DoD Dictionary of Military and Associated Terms*, 125.

[5]Ibid., 132.

[6]Ibid., 221.

[7]Ibid., 283.

[8]TRADOC Pam 525-73, 12.

[9]Ibid.

[10]DoDD 3000.3, 2.

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