US/UK Non-Lethal Weapons (NLW)/Urban Operations Executive Seminar



30 November 2000 London

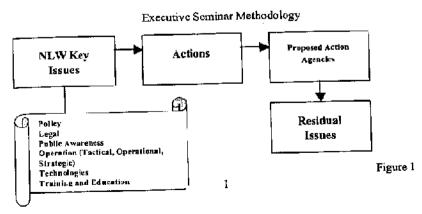
Assessment Report

Introduction. The US/UK Non-Lethal Weapons (NLW) Urban Operations Executive Seminar was conducted on November 30, 2000 at the Ministry of Defence, London. The Seminar was the concluding event in the US/UK NLW Urban Operations Wargaming Program; for which the planning began in April 1999. It brought together a broad spectrum of US and UK General and Flag Officers, as well as senior government civilians and key subject matter experts for the purpose of addressing a broad spectrum of issues relating to the development and use of NLW. A list of participants is at Tab A.

Objectives and Methodology. The specific objectives of the Executive Seminar were:

- To review the key results from the US/UK NI W Urban Operations Wargaming Program.
- To address issues and possible future courses of action regarding the NLW program as a whole.
- To identify and discuss issues requiring further consideration.

The first objective was addressed by providing participants copies of the assessment reports from each of the previous events in the program, and through summarizing the key findings across the entire effort in a short briefing. The second objective comprised the core of the Seminar, and was addressed through examining a range of critical issues and follow-on actions concerning the use of NLW generally that may have been grounded in, but went beyond the parameters of the Wargaming Program proper. These issues spanned a range of different areas of concern regarding the use of NLW, and were generally organized in terms of the categories reflected in the blue box in Figure 1 below. Moreover, the results of the issue discussions were "deconstructed" into recommended actions to facilitate follow-up activity.



Acceptability Criteria of interest to the Joint Non-Lethal Weapons Directorate, and the "ratural selection" of the issues themselves through rigorous vetting by both the US and UK staffs. Extensive discussions of the issues were led in plenary by the senior US and UK principals. Finally, the third objective was addressed in the round-table discussions of the issues. The agenda for the Seminar is at Tab B.

Background. As noted, the Executive Seminar was the concluding event in the US/UK NLW Wargaming Program. This effort consisted of a series of workshops, seminars, and war games; all designed to build upon each preceding event. The first event, the Policy Seminar, addressed overall policy and legal issues associated with NLW, political-military issues, rules of engagement criteria, psychological operations, information warfare requirements, and innovative employment concepts. War Game One and its associated workshop addressed the challenges and opportunities associated with the use of NLW at the tactical level of war. War Game Two and associated workshop examined the employment of NLW at the operational level of war. The third war game and workshop addressed strategic, and by extension, policy level issues relevant to the employment of NLW technologies and concepts. Finally, the Executive Seminar reviewed the key findings of the Wargaming Program, addressed broad-based issues of NLW employment and development, and identified possible future courses of action. The broad objectives of the overall Wargaming Program were:

- To identify key policy issues regarding NLW use.
- To identify the most promising current and future NLW systems.
- To determine employment options across different levels of war (tactical, operational, and strategic) and in different operational scenarios (Major Theater of War, Humanitarian Assistance, and Peacemaking/Peacekeeping).
- To develop concepts for employment of NLW independently and in combination with other lethal and non-lethal systems.
- To identify future NLW requirements the non-lethal systems or capabilities the
 operators think they will need in the future.
- To further refine, define, and expand the NLW "Core Capabilities."

The schedule of events for the entire Program was:

- Policy Seminar: 19-20 January 2000, Marine Corps Research Center, Quantico VA
- War Game/Workshop One: 4-7 April 2000, Wargaming Division, Quantico, VA
- War Game/ Workshop Two: 13-16 June 2000, Army War College, Carlisle, PA
- War Game/ Workshop Three: 12-15 Sept 2000, Naval War College, Newport RI
- Executive Seminar/Roundtable: November 30, London, UK

Key Findings. As noted, the Seminar discussions were structured around a set of critical issues that, though grounded in the Wargaming Program, ranged widely over a spectrum of concerns regarding the use of NLW generally. Issues were provided to participants in advance of the Seminar. Each was presented to the group by either a US or UK briefer, followed by often extensive discussion. The key points concerning each are assessed below. These are deliberately shaped as aggregate comments, with no attribution to any particular individual

consistent with the non-attribution policy that has governed the events in this Program. Where necessary, however, a delineation of US and UK positions is made. A detailed presentation of the issues from both US and UK perspectives is at Tab C.

Issue One: Terminology. The term "Non-Lethal Weapons" is ambiguous. A concerted effort is required to clarify ambiguities with respect to intent and use of non-lethal technologies...

"Non-Lethal Weapons" as a descriptive term is seriously limited in its capacity to attain the accuracy and granularity necessary to avoid many serious ambiguities impacting both the operational employment and policy and legal clarity regarding NLW use. As has been the case with this particular issue in other venues, discussion tended to raise as many questions as answers. There was general agreement that the term "Nonlethal" was inaccurate, but with the caution that changing it at this juncture could generate more confusion than clarity. It was suggested, however, that this confusion could be mitigated by a concerted emphasis on educating the military, media, and public concerning the nature and purposes of NLW. This effort will need to overcome the understanding that the term "Non-" means "not". A Red media campaign WILL ALWAYS use this term in the battle for world opinion against Blue when a casualty occurs. The official definition will be irrelevant since it cannot be mentioned or explained in a 30-second sound bite. Moreover, several steps toward greater "terminological" precision were suggested. First, NLW should be defined and discussed only in terms of use against people; i.e., the counter-materiel use of NLW is conceptually meaningless and the source of needless confusion. In other words, NLW should be viewed and discussed as anti-personnel weapons. Second, while it might be desirable to eliminate the "Non-" part of the descriptor, as suggested above, the feasibility of doing so was considered difficult. However, there was considerable enthusiasm, principally from the UK, for dispensing with the term (and notion) of "weapon" and instead focusing on non-lethal "capabilities" that produce non-lethal "effects." This would provide greater operational, as well as policy/legal flexibility. The consensus of the group, then, favored the term "Non-Lethal Capabilities."

Recommended Actions

US/UK

- The Senior Members directed both country staffs to work toward resolving the terminology issue and report progress.
- The UK agreed to take the lead in working the issue with NATO.
- A family of Non-lethal "capabilities" vice "weapons" should be emphasized.

US

- Update DOD policy.
- Develop a standard lexicon for DOD Dictionary of Military and Associated
- Continue to broaden and expand the NLW media and education campaign.

<u>Issue Two: Measures of Effectiveness.</u> A common definition of Measures of Effectiveness (MOEs) as it pertains to non-lethal weapons is needed; non-lethal counter-personnel weapons will be the major challenge.

The importance of the MOEs as an issue was recognized; though divergent views regarding their purpose emerged. Generally, the UK contended that MOEs should be shaped and defined by the operational ends sought; i.e., "effects" to be achieved. On the other hand, the US emphasized a "developmental" approach; i.e., the importance of MOEs in shaping the parameters and characteristics of non-lethal "capabilities," and their significance in "selling" non-lethals to an often highly skeptical wider audience — approaches to the problem from different angles that are by no means mutually exclusive.

At a more technical level, and regardless of the "angle of perspective", a workable set of MOEs are essential for any realistic testing or experimentation; i.e., we must know what we are testing for and how the capability in question is to achieve the objective. Attaining this has been particularly difficult in the case of NLW, which pose a number of interesting challenges. For example, a method needs to be developed to determine how to measure such states as "deter, delay, confuse, disorient, etc." and to measure the difference between "psychological and physiological" effects.

Additionally, most understand the concept of *Probability of Kill (Pk)* as applied to lethal weapons. There is also the concept of *Probability of Effectiveness (Pe)*. For lethal weapons *Pk* and *Pe* are often the same; i.e., a weapon system is effective if it accomplishes its intended purpose and "kills." However, this is not the case for NLW. Here, *Pe* does not equal *Pk*. Instead, the desired relationship is inverse proportionality; i.e., a low *Pk* coupled with a high *Pe*. For lethal weapons fatalities are expected; for NLW fatalities or permanent injury are unintended consequences.

Finally, a clear connection was seen between MOEs and Rules of Engagement (ROEs); e.g., MOEs relating to such considerations as time, range, and scope of effect clearly influence the shaping of ROEs (discussed in more detail as a separate issue). In this context, the term "Measures of Usefulness" emerged as a possibly more accurate alternative. Further points included:

- MOEs also relate to the broader issue of proportionality the use of non-lethal capabilities appropriate to the circumstances.
- Well-defined MOEs are important to the legal dimensions of non-lethal use in shaping such considerations as proportional effects and proportional undesired effects.
- MOEs may well be different at different levels of war.

Recommended Actions

US - UK

- Continue US / UK collaboration.
- Track progress of NATO study.
- Continue interaction with NATO.

Issue Three: Non-Lethal Weapons Posture & Employment. A NLW system that is easily identifiable and distinct may be preferred in some scenarios over a single weapon system with both lethal and non-lethal capabilities.

With regard to this issue, a divergence of perspective and position again emerged between the UK and the US. The UK argued that in situations of NLW use dedicated and clearly identifiable non-lethal systems/capabilities are essential to avoiding the "misreading of intent" by an adversary. The potential result of this "misreading of intent," of course, would be an unintended escalation of the situation to the use of lethal weapons with tragic consequences. Dedicated and clearly identifiable NLW would, moreover, lend itself to a "cleaner" public affairs approach to the use of such weapons. Their use and benefits could be explained without the potential confusion of the same "identifiable" systems being capable of lethal application in the traditional sense. In other words, dedicated NLW would present a less aggressive posture to both the intended target and to the media.

The US, on the other hand, advocated the utility of dual-purpose non-lethal systems. This integrated approach would better enable NLW users to rapidly and seamlessly respond to highly fluid operational situations; i.e., non-lethal to lethal and back again – a capability more appropriate to military operations as opposed to more traditional "police" applications. Obviously, in this case the public affairs dimension would be considerably more complicated. Other drawbacks to separate lethal and non-lethal systems cited by the US were additional organizational and logistical burdens. Is it feasible for troops to carry two weapons, one lethal and one non-lethal? Is it feasible and affordable to equip, support, and train with two different weapon systems? Dual capability weapons have a number of advantages, including simplified logistics, training, speed of transition from non-lethal to lethal, reduced equipment burden, and a more seamless integration of all capabilities across the full spectrum of conflict.

Not addressed during these discussions were capabilities representing a slight variation on the "dual-use" theme. Instead of a stark "lethal/non-lethal" choice, dual use, or "dial-a-yield" weapons would provide a multitude of options. For example, such systems could theoretically present the operator with choices ranging from mild discomfort to sever injury, or even death. Such a system could be used effectively against a wide variety of targets, from healthy young men, to children, the elderly, and the infirm. However, there are a number of questions that such a capability could generate. What would such multi-purpose weapons look like? What are their advantages and disadvantages? Are the advantages and disadvantages the same or different than those associated with "dual use" systems? How would they affect the "misreading of intent" issue noted above?

In conclusion, regardless of the approach or combination of approaches taken, a key issue remains. There is a need to combine lethal and non-lethal capabilities. The question is "how?"

Recommended Actions

US/UK

 Continue to examine the advantages and the disadvantages of dedicated, easily identifiable NLW. Compare this examination to the advantages and disadvantages of dual use weapons. Continue to develop NLW systems that best serve each country's purposes.

<u>Issue Four: Intelligence.</u> Non-lethal weapons development and operational use may require detailed intelligence data.

It was generally agreed that the circumstances of NLW employment generate some distinctive intelligence collection requirements. An interesting analog, though these are never precise, is the intelligence challenges associated with other precision weapons. Very precise or special effect weapons almost always require more detailed information. Prior to the prevalence of precision guided weapons (PGMs), the only intelligence required might well have been the location of a power plant. Today, with PGMs and cruise missiles, the requirements are much more specific. For example, it is essential that we know exactly how the power plant works, the location and vulnerability of key components, and even possibly which components are most easily repaired. Some of the same challenges for greater precision would appear to apply to NLW, as their use becomes more prevalent. For example, while in the past it may have been sufficient to know the location of a certain building, in the future, to successfully employ certain NLW it may be necessary to acquire information about a building's ventilation system or the internal arrangement of rooms. Precision and special effects weapons also raise battle damage assessment (BDA) challenges. In the past damage was usually visible - the building was in rubble, or the bridge was no longer standing. But today BDA is much more difficult. All that may be visible with a PGM is a relatively small hole in the building, with the extent of internal damage much more difficult to determine. This challenge can be exacerbated by the employment of NLW, which may leave little or no visual damage. Extensive employment of NLW may require increased reliance on HUMINT or novel approaches to assessing target damage.

Another example of distinctive intelligence requirements attending the use of NLW is the need for extensive and robust databases addressing the detailed characteristics and effects of the spectrum of non-lethal capabilities against a wide variety of potential targets. Such databases will be essential to the appropriate and effective use of many NLW.

But the most important intelligence requirement that emerged was the compelling need for what is variously termed "Cultural Intelligence." The interaction of NLW effects with the cultural attitudes and mores of different societies is significant in that it will likely drive the reactions and behavior of the objects of NLW use toward the employers of such capabilities. The example was offered that in some societies the debilitating and humiliating effects of certain NLW could be considered worse than death. The violation of such cultural norms could vastly complicate, if not jeopardize, a military mission, with the attendant irony that in such cases the use of lethal force could well be the more feasible and desirable choice.

Recommended Actions

US / UK

- As technologies mature and come on line, a NLW education process must be infused into our intelligence community.
- When feasible and appropriate, BDA requirements must be integrated into the NLW R&D process.

- There is a requirement to continually update intelligence requirements for all new forms of precision weapons, including PGMs, NLW, Computer Network Attack (Information Warfare), etc.
- Conduct a NLW Cultural Intelligence Seminar.

Issue Five: Public Awareness. A pro-active public affairs campaign is required for NLW use.

A robust and effective public affairs campaign addressing both domestic and international audiences was generally recognized as an essential dimension of the successful use of NLW. The broad goal of such an effort, of course, is enhancing the "acceptability" of NLW use and, regarding certain types of operations, the acceptability of the use of military force. The public affairs campaign must attempt to counter the seemingly inexplicable perception that somehow the use of NLW is worse than the use of lethal force - a view that, at least in some instances, would seem to turn the concept of proportionality on its head. Also significant was the recognition that a proactive education and public awareness program must be balanced against potential enemy intelligence activities. Advanced or detailed information concerning friendly NLW capabilities may give a potential enemy a number of advantages, including indicators as to what countermeasures to develop. Even with these potential disadvantages, however, the requirement for a proactive public awareness campaign remains. The broad goal of such an effort, of course, is to enhance the "acceptability" of NLW use. The public's general lack of information is a challenge to attaining acceptability for NLW. Changing the term "Non-lethal Weapon" to "Less-Lethal Capability or System" as discussed in Issue One would more readily attain public acceptability. If DOD pursues an awareness campaign using the term "Non-lethal" and there is a death, we will lose most of the credibility we have with the wider public. To them "Non" means NO, not some. A public awareness campaign must target a large audience that includes not just the public, but also the military. It should include media articles, television news feature stories, lectures, exhibitions and demonstrations, and military education classes. H should it should also emphasize that any use of NLW will be consistent with national and international law, include both the pleasant and unpleasant aspects of NLW, and stress that $NLW_{\underline{s}}$ may be used in a variety of different missions. In some cases they may be employed to save innocent lives and property, while in others they may be used to enhance the effectiveness of icthal weapons. In surn, the "Public Affairs Annex" must be considered an essential component of any Operations Plan (OPLAN) providing for the possible use of NLW.

Recommended Actions

US/UK

Coordinate public affairs efforts through exchange agreements.

US

 Continue current efforts to develop and execute a public information campaign plan.

UK

 Continue to monitor views of lobbyist organizations with a view to understanding their perceptions and countering their views. Issue Six: Legal-Applicable Law. Obligations under domestic and international law, including the law of war, have an impact on the ability to research, develop, and employ certain NLW technologies.

Legal restrictions on the DOD at several levels impact the ability to conduct research on, develop, and employ non-lethal capabilities. All NLW must undergo legal review in terms of the three broad standards of not causing unnecessary suffering, capable of discrimination between the intended target and innocent bystanders, and consonance with the various treaties governing NLW development and use. In reality, legal considerations in fact tend to prevail over others, on occasion generating dissonant relationships between the law and science of NLW. The principal treaties and agreements governing the development and use of NLW are broadly discussed in Tab C. It is interesting to note that in the US these do not apply to the Department of Justice (DOJ) or Department of Energy (DOE). The key point to note in this brief discussion is the extreme complexity and confusion regarding the interpretation of legal guidelines; e.g., "unnecessary suffering" is open to widely divergent interpretations, and wide differences often exist among nations concerning commitment to certain treaties and legal restrictions. This affects both the ability to conduct effective combined operations and the legal vulnerability of forces in areas absent Status of Forces Agreements (SOFA) and where divergences exist concerning adherence to treaties and agreements. For example, the US and UK interpret the Chemical Weapons Convention (CWC) differently regarding Riot Control Agents (RCA). The UK interpretation considers them to be chemical weapons under the CWC, and thus proscribed; the US view is that they are not banned under that agreement. This could lead to difficulties in combined operations in certain circumstances, a situation compounded by the fact that the UK is a signatory to the European Convention on Human Rights, which further governs the use of NLW. Moreover, US participation in the International Criminal Court is highly uncertain. No consensus was evident that the solution to conflicting, confusing, and unnecessarily constraining legal restrictions was to seek relief through amendment to treaties, statutes, etc. This was deemed too difficult, but more importantly the experience that such agreements rarely improve when revisited proved a serious deterrent to such an approach. It appears that "working within the system" to best advantage is the only practicable alternative.

Recommended Actions

US / UK

Continue to collaborate on the issue via exchange agreements and NATO.

US

- Move forward with Research and Development consistent with obligations under international law, including the law of war.
- Seek legal advice early in the R&D process to ensure NLW systems will comply with the law.
- Ensure that desired effects and methods of application are determined early to assist in the determination of legality process.
- If there are promising technologies that DOD is prohibited from pursuing, set up MOA with DOJ or DOE.

UK

 In accordance with international law obligations, subject each NLW technology or system to regular legal review.

- Carry out a legal review of the methods or means of using such weaponry in armed conflict to ensure compliance with international law.
- Monitor developments and proposals within the international NGO community to ban or curtail the use of certain NLW.

Issue Seven: Rules of Engagement. Rules of Engagement (ROE) should treat NLW the same as any other weapon or capability at the commander's disposal.

The ROE issue is linked to many others, the most obvious being legal considerations and Measures of Effectiveness, the latter connection previously noted. There are, however, a number of unique ROE issues associated with NLW. For example, the use of RCAs can cause ROE problems. There are specific times and circumstances when RCAs can be employed during international armed conflict; e.g., hostage rescue, human shields, POWs, and rear area security.

ROE should strive to emphasize the non-distinctive treatment of NLW as opposed to other weapons and capabilities. It is essential that ROE reflect the contingent circumstances of NLW use and provide maximum flexibility to the on-scene commander. ROE must be easily and simply convertible to operational orders that can be understood by the forces employing them. Every effort must be made to avoid creating a mindset that NLW, by virtue of their non-lethality alone, require separate or distinctive treatment under the ROE. If there are discrepancies or contradictions between coalition ROE and the participating nation's laws or policies, accommodations may have to be made by the local commander. In essence, it is essential that ROE reflect the contingent circumstances of NLW use and provide maximum flexibility to the on-scene commander.

Recommended Actions

US / UK

 Explore the necessity and the feasibility of developing combined standing ROE.

US.

- Continue to develop specific operational ROE based upon the Standing ROE, which covers the use of force, both lethal and non-lethal.
- Ensure that all NLW training incorporates the purpose and intent of ROEs and the link between the use of force and public perceptions.

UK

Ensure that ROE are common to lethal and non-lethal force.

Issue Eight: Multinational Operations. The integration of non-lethal capabilities into multinational operations poses significant challenges across the spectrum of war.

The prospect for friction in multi-national operations involving NLW with regard to legal issues and ROE has been noted previously. Additionally, the more technical considerations of system interoperability and common terminological use and understanding are essential to effective multinational use of NLW. There are, however, other questions concerning the challenges NLW may present to the conduct of multinational operations.

At the Tactical Level of War there will be some significant differences between multinational or coalition partners. These will likely include weapons, equipment, organization, doctrine, training, terminology and language. Also, these differences will be evident for any unique weapon systems. There should not be anything significantly different concerning the tactics, techniques, and procedures of using NLW at this level. Most tactical units are from a single Service and a single country. If tactical units are going to conduct multinational operations a number of accommodations related to the differences noted above will have to be made. It must be remembered that these differences are not uniquely associated with NLW.

At the Operational Level of War most members of the coalition force will have their own protocols and ROE.

At the Strategic Level of War national policies and legal commitments will be the most difficult issues for multinational force commanders. The challenge will be who controls which countries' forces, and what degree of control each country permits over its forces.

Another challenge associated with coalition or multinational operations will be notification and sharing of unique military capabilities, possibly including NLW. It is likely that as the technological disparity among coalition partners increases the pressure to share will also increase. A possible solution is to work out procedures that allow for the sharing of effects without sharing capabilities. This would necessitate the establishment of special liaison teams. The process could be based on procedures already in place that facilitate the sharing of the effects of artillery, air, and naval gunfire without sharing the assets that actually deliver the fires.

Recommended Actions

US / UK

Continue to collaborate via our exchange agreement and NATO.

US

- Tactical. The creation and publication of non-lethal weapons lexicon and definitions must be developed and included in military reference publications.
- Operational. Operational concepts for non-lethal weapons need to be
 defined, developed and exercised to demonstrate and determine the viability
 and utility of non-lethal weapons in levels of war and spectrums of conflict.
 Review whether new ROEs will be required as a result of new and emerging
 technologies based on the potential applications and targets.
- Strategic. Internal national assessments must be made on the willingness to employ and share non-lethal weapons technologies. Sensitivity and willingness to share information and classification of non-lethal weapons effectiveness with regard to classified programs need to be resolved.

<u>Issue Nine: Operational and Strategic Concepts.</u> Concepts for the employment of NLW at the operational and strategic levels of war do not exist.

This issue emerged over the course of the Wargarning Program, the broad findings of which were that NLW probably have their greatest impact at the tactical level and in the legal/policy

arena, that there is potentially little utility at the Joint Forces Command and the DoD Urban Working Group is examining the contributions of NL options at the operational level, and that there is potentially great, but unexamined, application at the strategic level. A key theme emphasized in the Seminar was the key role of NLW as operational enablers; another tool fully integrated into the panoply of capabilities available to the commander. To this end, the UK noted that NLW doctrine was, in its forces, subsumed into existing doctrinal publications, a point that addresses the larger issue of the need to integrate non-lethal and lethal capabilities both in concept and practice. An additional point from the group generally was that considerations of NLW use tend to blur and overlap the levels of war; i.e., tactical uses can have strategic implications and effects. Aspects at the strategic level that emerged as productive for follow-on investigation were NLW use in deterrence, and battlefield shaping. The potential use of NLW in this context raises, of course, the larger and persistent issue of how to best integrate both lethal and non-lethal capabilities in concept and practice. NLW must be conceived here as augmenting the use or threat of use of lethal force and of providing commanders with wider options for delivering fighting power and achieving strategic, operational, and tactical objectives. Integration is critical; there must be a concerted effort to counter the perception of purely "nonlethal operations."

Recommended Actions

US / UK

- Develop non-lethal concepts at the strategic and / or operational. Take an
 active role in the long range planning and advocacy for future non-lethal
 capabilities that contribute to warfighting strategies. This effort should
 include the development of joint concepts and doctrine, professional military
 education and expanded joint, service, and interagency support. (It must be
 remembered that we do not want or need separate NLW concepts. We must
 work to fit NLW and other "new" capabilities into overall combined arms
 concepts.)
- Integrate non-lethal capabilities into existing / future doctrinal publications.
- Continue to collaborate via exchange agreements and NATO.
- Continue socializing this idea within the military.

Concluding Session. A similar US/UK NLW meeting needs to occur annually to review issues of mutual interest and concern.

Technological Observations

Additional information and discussion notes on the following technological observations can be found at Tab C.

High Power Microwave Technologies

Observation. High Power Microwaves have a number of potential applications and desirable attributes as a non-lethal weapon; however, the public's adversity to electric power transmission lines, cellular phone towers, and the siting of radar systems, may be a prelude to analogous claims of latent material and personnel effects due to exposure to non-lethal weapons that use this technology.

Laser Technologies

Observation. Lasers have a number of potential applications and desirable attributes as a nonlethal weapon; however, the term "laser weapon" often conjures confusion with prohibitions under the blinding laser protocol.

Calmative Technologies

Observation. There are serious legal and technological challenges to developing and employing a calmative NLW. DOD is prohibited from pursuing this technology, while DOJ and DOE are not.

Wrap-up - Key Themes

Concluding Recommendation. A similar US/UK NLW meeting should occur annually to review issues of mutual interest and concern. The following are some of the key themes or wrap-up issues that require further investigation and might be addressed at a future Executive Seminar.

- Education Process.
- Training / Exercise Involvement.
- Public Awareness Campaign Plan.
- NLW Capabilities Lexicon.
- Measures of Effectiveness Definition / Study.

TAB A

Executive Seminar Invitees

Need a check on US attendees - plus a list of UK attendees

LtGen Emil R. Bedard, USMC Assistant Commandant Plans, Policy and Operations Headquarters, U.S. Marine Corps

Major General Bice, USMC Deputy Commander U.S. Marine Corps Forces, Europe

Mr. Dan Franken, SES-2 Deputy Director, Joint Experimentation J-9, Joint Forces Command

BGen Joseph Composto, USMC Staff Judge Advocate to the Commandant of the Marine Corps Headquarters, U.S. Marine Corps

MGen Carl Ernst, USA (Ret) Booz-Allen & Hamilton Inc

BGen Donald J Ryder, USA Commandant US Army Military Police School

BGen (Sel) Richard Zilmer, USMC Deputy Director, Operations (J-3) Headquarters, European Command

Observers

LtCol Chuck Beason Air Force Research Laboratory Brooks AFB, TX

COL Susan Cheney Senior TRADOC Liaison Officer to the United Kingdom

Mr. John Lellenberg ASD/SOLIC Mr. Jake Mentz Acquisition, Technology & Logistics OSD

Colonel Michael J. Muolo Division Chief Strategy, Resources and Congressional Affairs Headquarters, European Command

Dr. Michael Murphy Occupational and Environmental Health Directorate Brooks AFB, TX

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Mr. Frank Jordan Director, Wargaming Division, MCWL

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Major J. Scot Sauer Wargaming Division, MCWL

Maj Steve Simpson Deputy Director, Concepts and Requirements Joint Non-Lethal Weapons Directorate

Mr. David White Wargaming Division, MCWL

Maj Michael Lec Aide-de-Camp To LtGen Bedard

TAB B



US/UK NLW Wargaming Program Executive Seminar 30 November 2000 Agenda



Seminar Host/Master of Ceremonies: Mr. Combes

0830-0900: Arrival, Registration, and Coffee

0900-0905: Call to Order: Mr. Combes

0905-0915: Welcome and Introductory Remarks: LTGEN Bedard and VADM Blackham

0915-0930: Executive Seminar Brief. Mr. Jordan

0930-0950: US/UK NLW Wargaming Program Overview. Mr. Jordan

0950-1005: Break

1005-1035: NLW Capabilities Overview. UK: Dr. Hubbard; US: Col. Fenton

1035-1200: Issues and Actions. US/UK Briefing Teams; LTGEN Bedard and VADM

Blackham

1200-1330: Lunch

1330-1515: Findings and Actions (cont.).

1515-1530: Break

1530-1640: The Way Ahead: Discussion and Wrap-Up. Moderated by LTGEN Bedard and

VADM Blackham

1640-1650: Summary

1650-1700: Closing Remarks. LTGEN Bedard and VADM Blackham

TAB C

Executive Seminar Issues

Terminology

Issue Number One. The term "non-lethal weapons" is ambiguous. A concerted effort is required to clarify ambiguities with respect to intent and use of non-lethal technologies.

Presenter. United States.

Questions. Is the term "non-lethal" accurate? Is there a good alternative to the term "non-lethal?" Are all the systems now classified as NLW really weapons?

US Discussion. There has been much debate on the choice of the term "non-lethal" as the descriptor to this class of weapons. To date no other term has surfaced which adequately encompasses the intent of non-lethal weapons, which is to minimize collateral damage, whether it be to personnel, material or the environment. In many cases, non-lethal weapons have come to be solely associated with counter-personnel capabilities as opposed to counter-material applications. A major thrust for future non-lethal weapons will be counter-material weapons that will allow for ultra precision and non-kinetic strikes that result in non-explosive disablement of the target. The critical point here is that technologies used in a non-lethal counter-material system could have lethal or detrimental effects against personnel if they inadvertently enter the strike zone; the advanced tactical laser is one example.

Non-lethal weapons provide unique capabilities across the force continuum to include three distinct areas: 1) counter-personnel mission applications, 2) counter-material mission applications, and 3) counter-capability mission applications. The latter capability was applications, and Services wherein non-lethal weapons have potential applications in recommended by CINCs and Services wherein non-lethal weapons have potential applications in rendering key components of integrated systems, facility infrastructure and/or weapons of mass destruction (WMD) inoperative or unable to function.

Two primary *classes* of non-lethal weapons arise for use in the above mission applications and one supplemental class. The primary classes include non-lethal counter-personnel weapons and non-lethal counter-material weapons. The supplemental class includes non-lethal mission enhancers such as personnel or vehicle taggants, which are not technically, weapon systems. Therefore, one remedy short of changing the name would be a concerted effort to emphasize a "family of non-lethal capabilities" that include the two primary and one supplemental class of non-lethal weapons defined above.

UK Discussion. The UK agrees that the term non-lethal weapon is misleading. However, we also acknowledge that, despite much discussion, no appropriate alternatives have been found. Since the phrase is also widely utilized outside MOD, throughout the genesis of the subject and has a NATO definition it will be very difficult to change.

The NATO definition of NLW is:

Weapons that are explicitly designed and developed to incapacitate or repel personnel, with a low probability of fatality or permanent injury, or to disable equipment, with minimal undesired damage or impact on the environment.

To date the UK has stuck with the NATO definition on the grounds that it is suitable and that to diverge from NATO would be undesirable. This could be reviewed in the light of the US recommendations.

The UK is concerned that the use of the phrase Non-Lethal Weapon creates a false impression and could lead to the idea that non-lethal warfare is possible. This must be resisted.

Finally, the existence of anti-materiel NLW is often overlooked.

Measures of Effectiveness

Issue Number Two. A common definition of Measures of Effectiveness (MOEs) as it pertains to non-lethal weapons is needed; non-lethal counter-personnel weapons will be the major challenge.

Presenter. United States.

Questions. How should measures of effectiveness be defined for NLWs? What terminology should be used? Can MOEs be adequately determined for non-lethal counter-personnel weapons that are intended to "deter, delay, confuse, disorient, etc?" How will MOEs differ between NLWs, which produce a psychological response vs. a physiological response?

US Discussion. The term "probability of kill (Pk)" is well known and understood for lethal weapons. One approach would be to continue to use this terminology for non-lethal weapons where desirably the Pk of a NLW would be very low (e.g., Pk = .05). Another approach would be to adopt new terminology, such as "probability of not kill", "probability of injury," or "probability of permanent injury". No matter which terminology is adopted, measuring the effectiveness of non-lethal counter-personnel weapons across the span of the human population will be limited by the lack of empirical data that can be derived prior to a weapon's fielding. MOEs will have to be derived through extensive testing, modeling & simulation, and experimentation. Additionally, psychological models may play as an important role as physiological models for non-lethal counter-personnel weapons.

UK Discussion. There will need to be a degree of Pk methodology to ensure commonality across weapon systems. Much more work will be required to develop additional measures and the UK supports the US proposals to continue dialogue both bilaterally and within NATO.

Non-Lethal Weapons Posture & Employment

Issue Number Three. A non-lethal weapon system that is easily identifiable and distinct may be preferred in some scenarios over a single weapon system with both a lethal and a non-lethal capability.

Presenter. United Kingdom

Questions. What are the advantages and the disadvantages of having dedicated casily identifiable non-lethal weapons?

Discussion. Providing NL weapons to the operating forces is being conducted in two different ways. In the first case, the operating forces employ specially designed, easily identifiable non-lethal weapons. Such a solution has helped to reduce the possibility of escalation in situations where the use of lethal force is undesirable and can present a less aggressive posture both to the target and as seen by the media. The UK has even forbidden the use of rifle sights for surveillance in some scenarios where the implicit threat in pointing a rifle is undesirable. Civilian law enforcement agencies have taken this approach and it appears that this approach civilian law enforcement agencies have taken this approach and it appears that this approach makes sense for military forces conducting law enforcement oriented missions. In addition the corrent non-lethal kinetic munitions have proven to be more accurate when employed from a dedicated non-lethal system, this improved accuracy aids in limiting unintended injuries. Dedicated weapons are however a burden in terms of the need to carry a wholly distinct weapon system in addition to the primary, lethal system, which will always be required. Their use may imply a lack of resolve and a weakness in terms of an ability to rapidly switch to lethal fire.

If Non-lethal capability is seen as a need to persuade a target then correct *communication* is paramount. The use of a system where the intentions of the firer may not be apparent (even after firing) potentially leads to mis-communication.

This problem also applies to weapons such as non-lethal hand-grenades, which may be perceived as identical to lethal ones by the target.

Alternatively, standard weapons systems that can fire either lethal or non-lethal munitions have several advantages; such as simplifying logistics, training, speed of transition from non-lethal to lethal, the equipment burden on the man and allowing for the seamless integration of lethal and non-lethal systems into military operations conducted across the spectrum of conflict. The purpose of non-lethal weapons is to enhance the ability of military commanders to conduct mission across the range of military operations and therefore requires the military to train for use on non-lethal weapons in the various battlefield environments. The US Posse Comitatus Act restricts the use of the military in domestic law enforcement and policing activities. The existence of non-lethal capabilities does not represent the potential for "non-lethal war," and the unrealistic expectations to that effect must be vigorously avoided. Noncombatant casualties, to include scrious injuries and fatalities, will continue to be a regrettable outcome when military power is employed, regardless of non-lethal weapon availability. Even in Military Operations

Other Than War (MOOTW) or Crisis Response Operations (CRO), which involves close and continual interaction between the military and noncombatants, the presence of paramilitary forces, armed factions, or rogue elements will represent a constant but uncertain threat to our forces. The level of violence, and the threat to mission accomplishment may change frequently forces. The level of violence, and the threat to mission accomplishment may change frequently forces. The level of violence, and the threat to mission accomplishment may change frequently and with little or no warning. The ability to rapidly reson to deadly force must always be readily available when appropriate and in self-defense. The rapid reaction must however be available when appropriate and in self-defense the risk of inadvertently selecting the munition.

Intelligence

Issue Number Four. Non-lethal weapons development and operational use may require detailed intelligence data.

Presenter. United States

Questions. Will intelligence requirements for non-lethal weapons differ from lethal weapons? Will special education be required of the intelligence community? Will greater emphasis on cultural intelligence be required?

Discussion. The use of NLW in some instances may drive the need for increased intelligence data. For example, use of a fly-by, aerial malodorant system to clear a facility during a counterterrorist mission may require a pre-mission examination of the facilities' ventilation system blueprints to determine if the malodorant would reach various parts of the building. Additionally, the use of non-lethal technologies with their smaller visual damage signature may require special education of the intelligence community, increased use of HUMINT or novel approaches to assessing target damage. For example, use of a precision laser to disable a weapon system may result in damage to the target on a scale of inches. Additionally, intelligence data and assessments as it relates to cultural sensitivities and response to non-lethal weapons may be required. This latter topic has been highlighted to the U.S. Joint Staff during their participation in urban conferences, meetings, and NATO interactions.

Public Awareness

Issue Number Five. A pro-active public information campaign is required for non-lethal weapons.

Presenter. United States

Questions. How can we best educate politicians, the public, senior military and government officials and the media about NLW? How can we increase the acceptability of NLW? How do we accommodate the need to educate while preventing an adversary from developing countermeasures and / or viewing the employment of NLWs as a weakness?

US Discussion. In all of the war game events a common problem was the lack of accurate information about a number of issues concerning NLW. Additionally, as weaponization of nonlethal technologies gains momentum, the public's unfamiliarity with the weapons' potential effects may prove a challenge to acceptability. Politicians, the public, semior military officers and government officials, and the media must all be better educated about the capabilities and limitations of NLW. Areas that need to be emphasized in a public information campaign include countering false expectations and that NLWs are only one option in the warfighter's quiver to be used at the commander's discretion. Without such a campaign the employment of NLW can result in unwarranted criticism when casualties occur, as they inevitably will. The public information campaign also should ensure that everyone is aware that consistent with our international law obligations, including the law of war, we will care for those individuals wounded by NLW who come under our control. The campaign also should explain the difference between counter-personnel and counter-material NLW; specifically that non-lethal counter-material weapons can be lethal if personnel are inadvertently exposed as with the advanced tactical laser. Methods and means that might be employed in the campaign include information papers, media articles, test and experimentation reports, conferences, lecture series, exhibitions, etc. The public information campaign also should ensure that everyone is aware that consistent with our international law obligations, including the law of war, we will care for those individuals wounded by NLW who come under our control. The campaign also should explain the difference between counter-personnel and counter-material NLW.

UK Discussion. The UK agrees that the public awareness education will be important. This includes the avoidance of the expectation of wholly non-lethal operations. Lethal force will always back NLW and may therefore be required if the situation dictates, we need to emphasize that non-lethal capabilities are just another means of employing force to meet tactical or operational objectives. The following examples are issues that we expect to arise:

- There will always be a risk of lethality, even if only supposedly NL systems are used.
- Precision, standoff weapons are one method of reducing casualties, potentially
- Testing and proofing of NLW will be a complex process. Thus 'wonder weapons' the public may have heard of may take considerable time to bring into service.

- The potential for weapons that hurt but do not kill to be used as torture weapons must be acknowledged, we must ensure that the fact that someone else could misuse a weapon
- The fact that the Public, abetted by the Press, tend to lump all NLW together as one category and to judge them on the basis of the worst possible (most newsworthy) element even when MOD is not researching or procuring such systems.
- The fact that non-lethal weapons are seen as an option, which could make intervention easier with fewer consequences and hence could make war more likely.
- The need to counter the fear-of-the-unknown, new systems are often seen as suspect, perhaps bringing new and disturbing classes of wounds, yet some 'traditional' systems
- The perception that NLW may be used to incapacitate an enemy prior to killing him, this is unacceptable, as legally once an enemy is no longer a threat then he should be captured not killed, but some lobbyists have suggested that this is a way in which NLW will be used.

Legal - Applicable Law

Issue Number Six. Obligations under domestic and international law, including the law of war, have an impact on our ability to research, develop, and employ certain NLW technologies.

Presenter. United States & United Kingdom

Questions. What are the fundamental international treaties and principles of law affecting our ability to research, develop, and employ certain NLW technologies? What NLW technologies are most affected by these obligations? Are there differences between the United States and the United Kingdom in interpreting these legal obligations? How best can these differing interpretations be resolved? What criminal jurisdiction may arise in the case of the use of NLW?

Discussion. Treaties having a major impact on the research, development and employment of NLW include the 1993 Chemical Weapons Convention (CWC), the 1972 Biological Weapons Convention (BWC), and the 1980 UN Convention on Certain Conventional Weapons (UNCCW), and its four Protocols. For instance, the BWC precludes even the research into any biological weapon system. For the US there is a federal statute implementing the terms of the BWC that provides for sentences up to and including life imprisonment for violations of the BWC. The CWC, on the other hand, does not totally ban research and development of all chemical weapons. For example, it places a ban on anti-personnel chemical weapons, but allows for the research, development, and employment of certain anti-material chemical weapons. The CWC also allows for the use of riot control agents (RCA) under limited circumstances. The use of RCA is also regulated domestically in the United States by an Executive Order. The UNCCW and its Protocols place restrictions on the use of certain devices, e.g., incendiary devices, and outright bans other devices; e.g., projectiles that primarily wound with fragments that are undetectable by x-ray. The UNCCW also has implications for the development of laser weapons and other directed energy weapons. Unlike the US, the UK is also a signatory to the Ottawa convention banning anti-personnel mines, which will have relevance to explosive devices whether Non-lethal or not.

Differences also may exist between the United States and United Kingdom on the policy on RCA. This could potentially lead to divergence in conflicts where both the US and the UK were involved. The UK will be subject to the implications of the European Convention of Human Rights and will need to consider the requirement to provide alternatives to lethal weapons in certain situations when dealing with civilians and public disorder.

The relevant conventions have an impact on matters such as the legal review of weapons, and the requirement for sufficient data to enable a review to be completed. In addition all weapons systems are subject to the laws of war in terms of targeting and discrimination. The UNCCW also has implications for the development of laser weapons and other directed energy weapons.

The impact of the International Criminal Court will also need to be considered.

When forces are deployed without a SOFA, individuals may be subject to the jurisdiction of the host nation. Even if a SOFA is in force its terms may still only allow a sending nation

concurrent jurisdiction. Whilst in warfare, civil jurisdiction is not an issue, the greater number of operations other than war lead to more situations where it may be relevant.

Rules of Engagement

Issue Number Seven. Rules of Engagement (ROE) should treat NLW the same as any other weapon/capability at the commander's disposal.

Presenter. United Kingdom

Questions. Are there unique concerns with NLW that require separate ROE? Should the ROE contain a separate NLW section? Should selected NLW, such as riot control agents (RCA), be treated separately in the ROE? What problems are there with the employment of NLW under a single, coalition-wide ROE? How can a single coalition-wide ROE accommodate national differences in training with and employment of NLW?

UK Discussion. The UK position is encompassed in Joint Services Publication 398 UK Compendium of National Rules of Engagement. It is vital that ROE are easily and simply convertible to orders for our soldiers, sailors and airmen. To that end, it is essential that ROE are considered as a single entity and that non-lethal capability is subsumed into existing ROE, which in turn are reviewed frequently.

US Discussion. ROE must, whenever possible, grant maximum latitude to the on-scene commander. Except in those cases required by law or national policy (as in the case of certain RCA governed by the Chemical Weapons Convention), ROE should not distinguish between lethal and non-lethal force. In other words, the ROE should permit commanders to use all weapons (including NLW) properly in their arsenal in the manner required to effectively counter the threat presented and accomplish the mission. The real issue regarding the employment of non-lethal weapons is not ROE, but rather, effective training and tactics. In coalition ROE, the fact that there is no distinction between lethal and non-lethal force, enables all coalition commanders to effectively operate. If there are any discrepancies between the coalition ROE and the participating nation's law or policy, resort to that nation's law and policy can always be made by that commander. For the United States, the Joint Chiefs of Staff Standing ROE (SROE) provides the means by which the national command authorities (and subordinate commanders) regulate the use of military force. The SROE also serves as a tool for developing and tracking ROE for specific missions. The SROE currently do not distinguish between "lethal" and "non-lethal" uses of force, but instead, simply refer to the use of "force."

As in the case of RCA, there may be unique concerns with certain high technology NLW that require distinctive treatment within the ROE. Certain weapon systems require this type of distinctive treatment by virtue of the law or national policy. It can be foreseen that some of the high technology NLW will generate legal and/or policy concerns requiring distinctive treatment. Notwithstanding, every effort must be made to avoid creating a mindset that NLWs, by virtue of their non-lethality alone, require distinctive treatment under the ROE.

Multinational Operations

Issue Number Eight. The integration of non-lethal capabilities into multinational operations poses significant challenges across the levels of war.

Presenter. United States

Questions. Challenges exist with multinational operations. What, if any, unique challenges will the addition of Non-Lethal Weapons bring to multinational operations?

Discussion. Multinational operation is a collective term to describe military action conduct by forces of two or more nations that are either from a coalition or alliance. During multinational operations respect, rapport, knowledge of partners, and patience must be practiced. Steps to achieve rationalization, standardization, and interoperability are significant military challenges to enhance the probability of success in multinational operations. Cultural, psychological, economic, technological, informational, and political factors as well as transnational dangers all impact multinational operations. Other potential challenges include interoperability difficulties. differences in tactics, techniques, and procedures, varying concerns about ROE, different treaty and convention compliance requirements. U.S. Standing Rules of Engagement (SROE) do not apply in multinational operations. Multinational integrated strategy will often compete with divergent objectives on employment and application of force and Non-Lethal Weapons. This issue is particularly prominent in Military Operations Other Than War (MOOTW) or Crisis Response Operations (CRO). These types of operations involve greater interaction between military forces and civilians. They also involve closer interaction between units from different countries i.e. combined patrols, combined checkpoints etc. These challenges can be separated as follows:

- Tactical Level of War:
 - Difference in weapons, equipment, organization, and doctrine
 - o Difference in training, terminology and language
- Operational Level of War:
 - Normally each coalition or alliance develops its own protocols and contingency plans to guide multinational operations
 - Standing Rules of Engagement (SROE) or ROE are not uniformly accepted by coalition or alliance partners countries often use their own ROEs
 - Level of consent for use of Non-Lethal Weapons
- Strategic Level of War:
 - National sovereignty will be the most difficult issue for multinational force commander
 - Sharing and notification of Non-Lethal Weapons capabilities
 - National role, political will and objectives on use of Non-Lethal Weapons

In NATO operations, such as in Kosovo, one set of NATO ROE is issued. The ROE are worded broadly enough to allow each nation to interpret the ROE consistent with its national policy. To avoid inconsistent application of the ROE, oftentimes the participating nations are given their own sector to control. In coalition ops, ROE will have to be worked out consistent with the way NATO does it to be effective.

With respect to command and control issues, the President retains and will never relinquish command authority over U.S. forces. On a case by case basis, the President will consider placing appropriate U.S. forces under the operational control of a competent UN commander for specific UN operations authorized by the Security Council. The greater the U.S. military role, the less likely it will be that the U.S. will agree to have a UN commander exercise overall operational control over U.S. forces. Any large scale participation of U.S. forces in a major peace enforcement mission that is likely to involve combat should ordinarily be conducted under U.S. command and operational control or through competent regional organizations such as NATO or ad hoc coalitions.

No President has ever relinquished command over U.S. forces. Command constitutes the authority to issue orders covering every aspect of military operations and administration. The sole source of legitimacy for U.S. commanders originates from the U.S. Constitution, federal law and the Uniform Code of Military Justice and flows from the President to the lowest U.S. commander in the field. The chain of command from the President to the lowest U.S. commander in the field remains inviolate.

It is sometimes prudent or advantageous (for reasons such as maximizing military effectiveness and ensuring unity of command) to place U.S. forces under the operational control of a foreign commander to achieve specified military objectives. In making this determination, factors such as the mission, the size of the proposed U.S. force, the risks involved, anticipated duration, and rules of engagement will be carefully considered.

Operational control is a subset of command. It is given for a specific time frame or mission and includes the authority to assign tasks to U.S. forces already deployed by the President, and assign tasks to U.S. units led by U.S. officers. Within the limits of operational control, a foreign UN commander cannot: change the mission or deploy U.S. forces outside the area of responsibility agreed to by the President, separate units, divide their supplies, administer discipline, promote anyone, or change their internal organization.

Operational and Strategic Concepts

Issue Number Nine. Concepts for the employment of non-lethal weapons at the operational and strategic levels of war do not exist.

Presenter. United Kingdom

Questions. Should preemptive and preclusionary use of non-lethal weapons be a matter of policy? Should non-lemal weapons be used conjunction with economic sanctions, interdiction operations, and as operational persuasive tools?

Discussion. NEW concepts might cause temporary disablement of an opponent's war making capacity rather than its destruction and disintegration; moreover, the effects can be immediate or very rapid, rather than progressive and long-term. It is difficult to develop a precise, formulaic definition of a separate class of NLWs that are oriented toward strategic or operational applications. Complicating this is that in some scenarios, a large-scale or long range NLWs might be used for purposes that could be viewed as "strategic," and in other scenarios, that same weapon might be used for purposes that are clearly non-strategic. It might be said that any NLW could be used in a strategic context, that is, one in which the purpose or mission of its employment is strategic.

Non-lethal weapons provide an effective solution to the political and military needs of our emerging strategic setting. The effects to national and military strategy may prove revolutionary requiring considerable re-thinking in the way we approach conflict. Non-lethal weapons can provide utility beyond crowd control. NLWs may provide a significant capability to deter conflict, limit or prevent escalation, neutralize provocations in a localized area and provide a battlefield shaping capability. They provide precision effects, selective engagement and versatility. The ability to control the effects and minimize violence creates a flexible military capability that can respond across the spectrum or conflict.

NLW should be viewed as additional tools that provide the commander with a greater number and range of options. To reach their full potential and achieve better acceptance NLW must be integrated into operational concepts with lethal weapon systems. They must increasingly be integrated and considered part of a combined arms package, not a set of separate systems, but an additional capability. These strategic and operational concepts should not be constrained by current capabilities or those under development. The concepts must drive technological investigations. Some of the strategic and operational concepts that need to be addressed are:

- Physical separation of conflicting parties.
- Non-lethal Flexible Deterrent Operations (NL FDO)
- Interdiction (counter proliferation, terrorism, narcotic trafficking aggression)
- Isolation as compared to economic sanctions.
- Operational persuasion.
- Lethal augmentation.
- Preemption or preclusionary role

Hostage rescue and Counterterrorism.

The UK acknowledges the strategic, operational and tactical levels of war, each overlaps and interrelates. Moreover, a tactical incident may have operational or strategic impact – and viceversa. By adopting a capability-based approach and identifying core capability areas which have potential for non-lethal capability, the UK believes that there is no need to identify in advance strategic or operational concepts. Should a capability emerge which requires control at the operational or strategic levels, existing processes are in place to ensure appropriate command and control measures. Moreover, in order to negate perceptions of 'non-lethal warfare' and to minimize the quantity of Doctrine Publications, UK intends to subsure doctrinal considerations of Non-Lethal capability into existing Doctrine publications.

Observations

The following items are separated into three categories.

High Power Microwave Technologies

Observation One. High Power Microwaves have a number of potential applications and desirable attributes as a non-lethal weapon; however, the public's adversity to living close to large concentrations of high power electrical transmission lines, cellular phone towers, and radar systems, may be a prelude to analogous claims of latent material and personnel effects due to exposure to non-lethal weapons that use this technology.

Presenter. United States

US Discussion. If this technology matures sufficiently and is fielded as a weapon system, claims of alleged latent harmful effects could occur. For example, incidents of citizens concerned about the effects of high power transmission lines and cell phones causing cancer are well known. While these concerns are based on long-term exposure and have not been scientifically validated, one could envision similar claims being made after exposure to a non-lethal HPM weapon. For example, motor vehicles subjected to an HPM beam that are later involved in an accident and/ or personnel who were exposed while in the vehicle and develop cancer later in life. A robust human effects data collection and analysis effort for all countermaterial high-power microwave programs will help counter this issue.

UK Discussion. This is certainly an area where public perception is likely to be more relevant than the truth. Whilst most people acknowledge that whatever the risks of transmission lines and cell phones, the devices have a beneficial effect on their lives and thus accept reassurances based on 'no link has been found' rather than 'no link exists'. With weapons, which the public may not see as necessary the criterion under which they are judged may turn out to be far tougher. UK has traditionally only considered such systems in anti-materiel roles.

Laser Technologies

Observation Two. Lasers have a number of potential applications and desirable attributes as a non-lethal weapon; however, the term "laser weapon" often conjures confusion with prohibitions under the blinding laser protocol.

Presenter. United States

US Discussion. Laser technology has many potential applications for non-lethal weapons that include both counter-personnel and counter-material applications. Additionally, counter-material lasers can be tunable with a range of effects from non-lethal to lethal. Lasers for counter-personnel applications include low-energy laser illuminators that produce a temporary dazzling effect and vision impairment that is eye-safe and high-energy pulsed chemical lasers, which can produce a blunt-impact effect. Lasers for counter-material applications include high-energy lasers that can cut thin metals, blow tires, etc. Although a clear policy exists in the U.S. on the prohibition of the development and use of laser weapons that are intended to blind, it has become apparent that a continuous education process is needed to inform the public that this protocol does not preclude the development and use of laser weapons not intended to blind.

UK Discussion. The UK agrees that the public perception has sprung from a strong revulsion to blinding and yet has tended to affect all lasers whether they are intended to blind or not.

Calmative Technologies

Observation Three. There are scrious legal and technological challenges to developing and employing a calmative NLW.

Presenter. United States

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US Discussion. During the war game scenarios, numerous participants expressed the desire to have a NLW that could quickly incapacitate individuals with little or no after-affects. The participants desired this NLW to be employed in a variety of scenarios ranging from crowd control to incapacitating enemy combatants. Generally, a chemically based calmative agent was viewed as the technology that could provide this capability. The Chemical Weapons Convention (CWC), however, would prohibit the development of any chemically based agent that would even temporarily incapacitate a human being. The CWC does allow the use of riot control agents (RCA) in limited circumstances. Under the CWC, RCA may not be used as a "method of warfare." An RCA, however, cannot temporarily incapacitate individuals without running afoul of the CWC. RCA may only produce "sensory irritation or disabling physical effects which disappear within a short time following termination of exposure." The effects of CS gas being a classic example. Any calmative agent would have to be developed to have the effect of an RCA, which is much more limiting than the types of effects desired by the war game participants. The calmative could then only be employed as an RCA, i.e., non-armed conflict situations, such as peacekeeping, humanitarian, and counter-terrorist operations; or, for limited defensive purposes during armed conflict. Of course, the United Kingdom's position with respect to RCA would mean it could not develop or employ a calmative-type of RCA. The United States realizes the potential value of NLW to help save lives. Therefore, a research and development program with respect to both chemically based calmatives as an RCA, and non-chemical systems that bring about the same desired effects be continued as long as it is cost-productive to do so. All R&D efforts must be conducted in a manner consistent with our obligations under international law, including the law of war. We must also adhere to U.S. domestic policy and law.

UK Discussion. The US correctly identifies the problems of existing treaties. There may also be problems with the possibility that non-combatants are affected by calmatives, which may not be discriminate.