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THE CF's APPROACH TO NON-LETHAL WEAPONS & THE STRATEGIC OSTRICH EFFECT

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PCEMI 38

Maîtrise en études de la défense

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CANADIAN FORCES COLLEGE - COLLÈGE DES FORCES CANADIENNES
JCSP 38 - PCEMI 38

MASTER OF DEFENCE STUDIES

**NON-LETHAL WEAPONS (NLWs):
THE CF's APPROACH TO NLWs & THE STRATEGIC OSTRICH EFFECT**

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7 May 2012

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ABSTRACT

This paper critically assesses the Canadian Forces' (CF) Non-Lethal Weapons (NLWs) program. The CF has conducted numerous operations where there has been an operational imperative for NLWs and where an alternative to lethal force was required. The CF, therefore, needs to anticipate and address such operational requirements and correct deficiencies where they exist.

The objective of this paper is to demonstrate that there is a valid operational requirement for NLWs and show that the CF's NLW program lacks institutional maturity. An analysis of Canadian-specific case studies will illustrate the necessity of NLWs. An examination of the NLW programs used by Canada's key allies, US, UK and Australia, will confirm that in contrast to these nations, the CF's program requires strategic guidance and would benefit from senior leadership endorsement of the requirement for NLWs. Without such action, one could conclude that the CF's NLW program will continue to accept status quo, progress in an ad hoc manner, and thus, fail to provide soldiers with force protection measures that minimize civilian casualties.

Leaders must look for ways to achieve their political goals while also protecting the sanctity of human life. NLWs can bridge the gap between lethality and doing nothing at all.¹

INTRODUCTION

The overall intent of this paper is to demonstrate that the Canadian Forces (CF) has an operational requirement for Non-Lethal Weapons (NLWs) for deployed and domestic operations. There are many challenges and myths associated with the employment of NLWs that often cloud the debate surrounding this subject. Legal issues remain one of the most important considerations that affect the employment of NLWs, and the legal challenges become more complicated when dealing with domestic operations. A mandate for the use of NLWs currently exists within the legal framework of the *National Defence Act*, as well as, in *International Law*. NLWs would have application across the full spectrum of military operations; yet, the CF limits the employment of NLWs solely for crowd confrontation tasks. The epigram highlights that there is a need for a NLWs program that provides an alternative to lethal force; that complements the requirements for force protection; but also recognizes that there is the broader strategic goal of minimizing civilian casualties.

There have been numerous operational scenarios that substantiate the capability, deficiency and operational requirement for NLWs. As well, the future security environment predicts an increased demand for NLWs, as a future trend, because military forces will operate in urban environments where the enemy inter-mingles with the civilian population. Therefore, NLWs would enable our forces to be successful without

¹ Major Richard L. Scott, "Non-Lethal Weapons and the Common Operating Environment." *Army Magazine* (April 2010). Journal on-line; available from http://www.ausa.org/publications/armymagazine/archive/2010/4/Documents/FC_Scott.pdf; Internet; accessed: 5 March 2012. 55.

alienating a local population. There are challenges associated with NLWs, but they can augment force protection by providing a credible complement to lethal force options. While the CF embraces the concept of the ‘strategic corporal’, they do not empower him with the full complement of equipment necessary to achieve the desired effects.

Overall, the benefit of having a robust NLWs program is that it will complement the CF’s requirements for force protection and enhance the capacity to respond to a variety of threats with a commensurate level of force. Furthermore, as the technology of NLWs continues to advance, the CF should examine technologies that support the achievement of strategic objectives while minimizing casualties and collateral damage. The complexity of the contemporary operating environment creates a precarious balance between the need for tactical action with the realities of a fragile political environment. The use of force should not create a situation that results in an adverse effect that jeopardizes the overall mission and the desired political objectives. Addressing the operational requirement for NLWs should be a simple decision, but in reality, this has not been the case:

Non-lethality’s allure is simple: between the moment when diplomacy fails and conventional military force is considered...[militaries need] more options to either sending in a totally lethal force or accepting status quo. Technology now offers such options and they are life-conserving, environmentally friendly, and fiscally responsible.²

To support the thesis that there is an operational requirement for the CF to employ NLWs, as part of international and domestic operations, this paper will consider a series of topics including: a general overview of NLWs technology; the operational requirement

² Major Kyle Garland, USAF, “Non-Lethal Weapons: Impact and Utility Concerns for Operational Commanders in Future Conflicts” Naval War College, Joint Military Operations, Seminar 6, 13 February 1998, Journal on-line; available from <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA348809>; Internet; accessed 5 March 2012.

for NLWs; the Canadian perspective on the future security environment; and the legal mandate for employing NLWs. These topics are important because they serve as the foundation for the two main elements of the paper.

First, a series of historical case studies highlight CF operations where the employment of NLWs could have provided an effective alternative to lethal force. This approach is meant as a vehicle to study past operations that also represent the likely challenges faced on future domestic and international operations. Within this section, there is an assessment based on historical precedent as to why the CF continues to resist the operational requirement for NLWs.

Second, the paper examines the CF's current NLW program that includes a review of recent projects, as well as, the significance of the research and development community's efforts in support of furthering the CF's NLW capability. It would appear that, in contrast to our main allies, the US, UK and Australia, our program is "stove-piped" and ad hoc in nature. Moreover, the CF's NLW program would benefit from more specific strategic guidance to assist with the procurement and development of our NLW capability. The final section of the paper provides a series of recommendations regarding the CF's NLWs program, which will be important should the CF maintain a status quo approach to the procurement and development of NLWs.

The conclusion supports that there is a bona fide operational requirement for NLWs and that the CF should embrace this capability for both deployed and domestic operations. However, it is assessed that the CF lacks the capacity to establish a joint NLW program and will continue to ignore the requirement for NLWs.

NON-LETHAL WEAPONS 101 - DEFINING THE CAPABILITY

This section provides a brief overview of the technology of NLWs, as well as, a discussion of the definitions of ‘what are NLWs’ and in some cases what they are not. There are different national and organizational interpretations of NLWs and these have been a formative issue surrounding the debate associated with NLWs.

Theoretically, it is difficult to argue that a weapon provides a tactical solution that enables or jeopardizes a political objective; this is because it is not the weapon, but rather the soldier that decides when, how and what level of force will be applied. With this in mind, NLWs are considered an important military capability because they provide a complement to the levels of force and the weapons available to soldiers. As such, NLWs may be considered as a combat multiplier because they address an operational deficiency and they enhance the soldiers’ ability to respond to battlefield threats. It is recognized that when soldiers are properly trained and are provided with a variety of tools, i.e., lethal and NLWs, soldiers will utilize the proper weapon commensurate with the threat and operational scenario. As such, NLWs provide the soldier with an intermediate level of force that complements rather restrict his/her lethal force options. Specifically,

A force armed only with traditional military weapons normally has only two options for enforcing compliance: threats of deadly force and application of deadly force. This limitation creates a critical vulnerability, which belligerents may quickly discern, and use to their advantage. Non-lethal capabilities provide a wider range of options, which augment traditional means of deadly force, but do not replace them.³

The subject of NLWs can be emotive and quite broad; therefore, for greater clarity, it will be important to know that the focus of this discussion will be on Army-centric tasks (level of Infantry Company and below). As well, the paper will consider

³ Department of National Defence. *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operation*. (Ottawa: DND Canada, January 2008). 97.

generic theoretical capabilities of NLWs as opposed to recommending any specific technologies.

The definition for NLWs, according to the CF, is understood to be:

Those weapons, munitions and devices that are explicitly designed and primarily employed so as to incapacitate personnel, material, while minimizing fatalities, permanent injury to personnel and undesired damage to property and the environment.⁴

For the purpose of this paper, this definition will be accepted as the context for the discussions that follow.

The CF's definition also recognizes those elements that are specifically excluded from this subject; this includes information operations and non-lethal artillery munitions, such as, illumination, smoke, pamphlet or carbon fibre strips.⁵ By contrast, the US has defined NLWs in a similar fashion to the CF; however, their definition provides additional precision by considering the intent, the effects and the characteristics of the weapon itself. NLWs, according to the American definition, must exhibit one or more of the following effects: incapacitation, reversibility, discrimination and non-destructive use of force.⁶

The NATO definition is similar to the CF and US definitions; however, it also incorporates and recognizes the potential for injury and death. Specifically,

Those weapons which are explicitly designed and developed to incapacitate or repel personnel with low probability of fatality or

⁴ Department of National Defence. *B-GL-300-001/FP-001, Firepower*. (Ottawa: DND Canada, February 1999), Chapter 5, 105.

⁵ *Ibid.*, 105.

⁶ US Department of Defense. *Directive 3000.3 Policy for Non-Lethal Weapons*. Dated 9 July 1996 and revised 21 November 2003. <http://www.dtic.mil/whs/directives/corres/pdf/300003p.pdf>; Internet; accessed 15 January 2012, para 3.1.2.1, 2.

permanent injury, or to disable equipment, with minimal undesired damage or impact on the environment.⁷

Comparing the similarities and nuances of these definitions serves to highlight the different national and organizational interpretations of NLWs, which has been a formative issue surrounding the debate associated with these weapons since they were first introduced.

The discussion will now shift to a brief overview of the types of NLWs and the different types of technology. The object of this paper is not to provide details for all of the weapons because this would be too extensive. In general, NLWs technologies are broken-down into the following categories⁸:

- (1) Electromagnetic – stun gun; millimetre wave technology; and infrared lasers;
- (2) Chemical – obscurants; malodorants, calmatives; and riot control agents;
- (3) Acoustic – audible; infrasonic; and ultrasonic;
- (4) Kinetic energy and Mechanical – blunt impact; barriers; and entanglements;
- (5) Vehicle-stopping technology – caltrops, nets, and barriers;
- (6) Ancillary technologies – markers; and non-lethal casings; and
- (7) Combined technologies – flash bang grenades; and multi-sensory distraction.⁹

⁷ NATO Press Statement on Non-Lethal Weapons, 13 October 1999, Issue No. 40, September-October 1999. Journal on-line; available from <http://www.nato.int/docu/pr/1999/p991013e.htm>; Internet; accessed 13 January 2012.

⁸ Dr Peter Dobias, *Non-Lethal Weapons Capability Based Analysis*. Technical Memorandum DRDC-TM-2011-173, Defence R&D Canada – Centre for Operational Research and Analysis (CORA), October 2011, 64.

⁹ US Department of Justice. *Types of Less-Lethal Devices*. National Institute of Justice. 11 July 2008, Journal on-line; available from <http://www.nij.gov/nij/topics/technology/less-lethal/types.htm>; Internet; accessed 21 January 2012.

This list suggests that the topic of NLWs includes a wide variety of weapon systems and technologies. However, the CF's approach has been restricted by doctrine to focus on only those specific technologies used in support of crowd confrontation tasks. This approach differs from the US, which considers the employment of NLWs as a core requirement across the full-spectrum of operations and they also differentiate between technologies that address counter-personnel and counter-material tasks.¹⁰ As well, the employment of NLWs is considered as a force-multiplier that provides the capability of US forces to achieve the following objectives:

- (1) Limit escalation;
- (2) Take military action in situations where the use of lethal force is either not preferred or not permitted under the established ROE;
- (3) Improve the protection of military forces;
- (4) Disable equipment;
- (5) Engage and control people; and
- (6) Separate combatants from non-combatants.¹¹

CF doctrine states that the employment of NLWs provides flexibility in the conduct of crowd confrontation operations, and it recognizes that the commander needs to balance several competing demands, including, force protection, the obligation to use minimum force and of course, mission accomplishment.¹² As previously stated, the CF

¹⁰ Counter-personnel tasks are further broken as: crowd confrontation, incapacitate personnel, deny area to personnel; and clear areas, facilities and structures. Counter-material tasks are inclusive of the following tasks: disable/neutralize vehicles, vessels, equipment and aircraft; and, area denial for vehicles, vessels, equipment and aircraft.

¹¹ US Department of Defense. Military Operations: Force Operating Capabilities. TRADOC Pamphlet 525-66. 7 March 2008. <http://www-tradoc.army.mil/tpubs/pams/P525-66.pdf>; Internet; accessed 21 January 2012. 87-89.

specifically restricts the employment of NLWs to crowd confrontation tasks, whereas the US views them employed “in conjunction with lethal weapon systems across the full spectrum of military operations where overwhelming force is employed.”¹³ The CF would clearly profit from adopting and leveraging the benefits of employing NLWs in an expanded role. Despite these differences, there are several common principles between the CF and US directive that are critical to the effective employment of NLWs, including:

- (1) NLWs are always to be backed up by lethal weapons;
- (2) The availability of NLWs shall not limit a commander’s options for self-defence; and
- (3) If appropriate, deadly force shall be applied without having first to apply non-deadly force.¹⁴

This section provided an overview of the definition of NLWs, the categories of NLW technologies, as well as, the principle objectives and employment considerations of a credible NLW capability. This information provides the framework for a common understanding of NLWs that will be used for the discussions that follow.

¹² *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operations*. (Ottawa: DND Canada, January 2008), 97-98. The CF definition can also be found in *B-GJ-005-302/FP-001, CFJP 3-2 - Domestic Operations*.

¹³ US Department of Defense. *Directive 3000.3 Policy for Non-Lethal Weapons*. para 4.7, 3.

¹⁴ *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operations*. 99.

CHALLENGES AND CONCERNS – EVOLUTION OF THE NLW CAPABILITY

It is next to impossible to discuss the topic of NLWs without acknowledging the challenges and concerns associated with their development. The paper will not focus on the debates of yester-year, but rather discuss only those issues that are relevant to the current operating environment, as well as, the challenges and controversy associated with the employment of NLWs.

Overall, this paper considers these discussions as background issues that, in some cases, have been argued extensively for several decades. Therefore, the paper provides only a cursory discussion on these issues in order to highlight specific concerns as they relate to the employment and proliferation of NLW among our allied partners. In some cases these discussions serve as the background to better understand current issues, such as, human effectiveness testing, weapons reliability and rules of engagement, which formulate the modern debate surrounding their employment.¹⁵

The first theme worth addressing relates to the controversy and concern that these weapons were designed to reduce the pain and suffering of lethal force; however, historically, the application of non-lethal force has been incongruent with its intended results. The unfortunate paradox has been that the consequences of employing non-lethal weapons has created egregious injuries and has resulted in numerous deaths. The use of rubber bullets in Northern Ireland in the late-1960s and early 1970s is a prime example. Another case is the concerns related to the safety of the electroshock device, known as TASER, which have been sold to law enforcement agencies in 45 countries since 1998. The TASER was considered to be an alternative to employing lethal force; however,

¹⁵ John Alexander, “An Overview of the Future of Non-Lethal Weapons,” in *The Future of Non-Lethal Weapons: Technologies, Operations, Ethics and Law*. (London: Frank Cass Publications, 2002), 23.

there have been 300 deaths in the US and 21 deaths in Canada between 1998 and 2008 as a result of using the TASER.¹⁶ A follow-on study by the Minister of Public Safety deemed that these systems were safe although it was acknowledged that, in some cases, the victims' medical condition may have contributed to their deaths. The result of the study instituted guidelines on the training, testing, supervision and reporting on the use of these systems that applies to all Federal, Provincial, Territorial Justice Ministers and their departments.¹⁷ These are but two examples of the concerns that surround the debate associated with the employment and proliferation of NLWs.

From a military perspective, it is understood that there may be casualties and the unintended consequence of death as a result of employing NLWs. Accordingly, the employment of NLWs is considered an alternative to lethal force even though the unintended consequence may result in casualties or damages.

NLWs shall not be required to have zero probability producing fatalities or permanent injuries. However, while complete avoidance of these effects is not guaranteed or expected, when properly employed, NLWs should significantly reduce them as compared with physically destroying the same target.¹⁸

The second general theme found in the literature was a historical bias. Overall, it was found that one needs to carefully weigh the merits of the information provided with the historical context of the research material being reviewed. Despite the overwhelming amount of material on the subject of NLWs, there were only a few articles that considered the historical evolution of the debate surrounding the employment of NLWs.

¹⁶ The Economist. "Zapped: Do Electronic Stun Guns Take More Lives Than They Save?" Journal on-line; available from <http://www.economist.com/node/1184878>; Internet; accessed 13 January 2012.

¹⁷ Public Safety Canada, "Public Safety Minister Toews Leads Intergovernmental Consensus on National Guidelines for Conducted Energy Devices" Internet: date last modified 15 October 2010, <http://www.publicsafety.gc.ca/media/nr/2010/nr20101015-1-eng.aspx>; Internet; accessed 5 March 2012.

¹⁸ US Department of Defense. *Directive 3000.3 Policy for Non-Lethal Weapons*. para 4.6, 3.

It is important to recognize that the debate surrounding the employment of NLWs has evolved from the theoretical perspective to operational practice. As well, hypothetical concerns previously focussed on ethical and legal issues but now focus on operational matters. The evolution of the debate suggests that NLWs are becoming a mature capability that can be employed by military forces while deployed. Support for this argument is based on the progress of NLWs munitions and technologies, which have shifted from primarily a law enforcement role towards a focus on counter-insurgency in Iraq and Afghanistan whereby these capabilities can be employed to protect the population and mitigate collateral damage.¹⁹ As well, the modern-day discourse appears to be focused on tangible operational issues vice conjecture and theoretical debate. The legal issues now consider second order effects, such as targeting and employing lasers, which were not widely considered prior to the operational proliferation of these systems. For instance, the debate surrounding the employment of NLWs on a crowd constitutes a breach of the laws of armed conflict unless it can be demonstrated that the technology and employment of these weapons are sufficiently discriminating and avoid the targeting of civilians.²⁰

The technology and application of NLWs will continue to evolve. As such, the military and defence industry must address the concerns associated with NLWs in order

¹⁹ U.S. Department of Defence, *Non-lethal Weapons Program Annual Report 2010-2011 – Non-Lethal Weapons for Today's Operations*. <http://jnlp.defense.gov/pdf/annualreport/2010%20Annual%20Report%20Final%20PDF.pdf>; Internet; accessed 21 January 2012. 5.

²⁰ By definition, “a weapon is deemed indiscriminate if it might strike or affect legitimate targets and civilians or civilians objects without distinction. Clearly, weapons that are indiscriminate in their effect are prohibited. Therefore, a weapon that cannot be directed at a specific legitimate target or the effects of which cannot be limited as required by the Law of Armed Conflict would be deemed a prohibited weapon.” Quoted from Department of National Defence, B-GG-005-027/AF-021 *The Law of Armed Conflict at the Operational and Tactical Level* (Ottawa: DND Canada, 2001), 5-2.

to maintain credibility and legitimacy. Moreover, the CF should adopt a proactive engagement process to inform key leaders including government officials, foreign militaries, and the general public in order to address ethical concerns upfront.²¹ This would assist the CF in gaining support for the employment of NLWs and, more importantly, to avoid the challenges and concerns that have plagued the development and acceptance of NLWs since they were first introduced in the 1960s.

THE OPERATIONAL REQUIREMENT FOR NLWs

The operational requirement for fielding NLWs is based on the need to provide warning, to ensure compliance and to determine intent when operating in close proximity with local populations. Within this operating environment, the soldiers must also consider the requirement to maintain force protection. As such, the CF would benefit from a non-lethal capability that enables the management of force escalation while limiting non-combatant casualties, as well as, collateral damage.²²

The operational requirement for NLWs should consider the following factors:

- (1) Military forces are frequently deployed within population centres;
- (2) Counter-insurgency operations take place in urban environments and there is a need to discriminate between combatants and the local population;
- (3) There is a need to minimize undesired casualties, damages and fratricide;

²¹ US Department of Defence, *Non-lethal Weapons Program Annual Report 2010-2011 – Non-Lethal Weapons for Today's Operations*. <http://jnlwp.defense.gov/pdf/annualreport/2010%20Annual%20Report%20Final%20PDF.pdf>; Internet; accessed 21 January 2012. 26-27.

²²Major Stephane Dufour, *Canadian Army Non-Lethal Requirements*. Presentation to the International Law Enforcement Forum for Minimal Force Options. Pittsburgh, PA, 26 November 2009, slide 9.

(4) The 3-D Approach²³ requires a more responsible application of the use of force and an understanding of the strategic consequence of errors; and

(5) There is a need to apply a proportional amount of force with scalable effects.²⁴

In order to properly understand the context of the operational requirement that justifies the need for NLWs, the paper will consider the soldier's role while deployed on operations. Within this context, soldiers must determine intent and react to potential threats in a restricted time and space envelope. Having determined the intent, think friend or foe scenarios, the soldier has only a limited number of options available with which to react. Currently, soldiers are limited to two levels of force across the full spectrum of operations; the options are non-deadly and deadly force. The process to shift between these levels of force is called the escalation of force process. As well, the soldiers have a limited timeframe and safety zone within which they must assess the threat and apply the escalation of force process.

The figure below indicates that the soldiers have approximately 100 meters to determine the intent, utilize any warning devices available, warn other soldiers in the immediate vicinity and then prepare to apply lethal force, if necessary. The 100 meter range is significant because this is specified as the desired operating range and, thus, the essential requirement for many NLWs. However, some weapons may have a more limited range; nevertheless, the technological imperative is working to extend the

²³ The 3-D Approach consists of diplomacy, development, and defence.

²⁴ Dufour, slide 3.

maximum effective range for all NLWs in order to gain additional stand-off range and time for soldiers dealing with close-proximity and hostile scenarios.²⁵

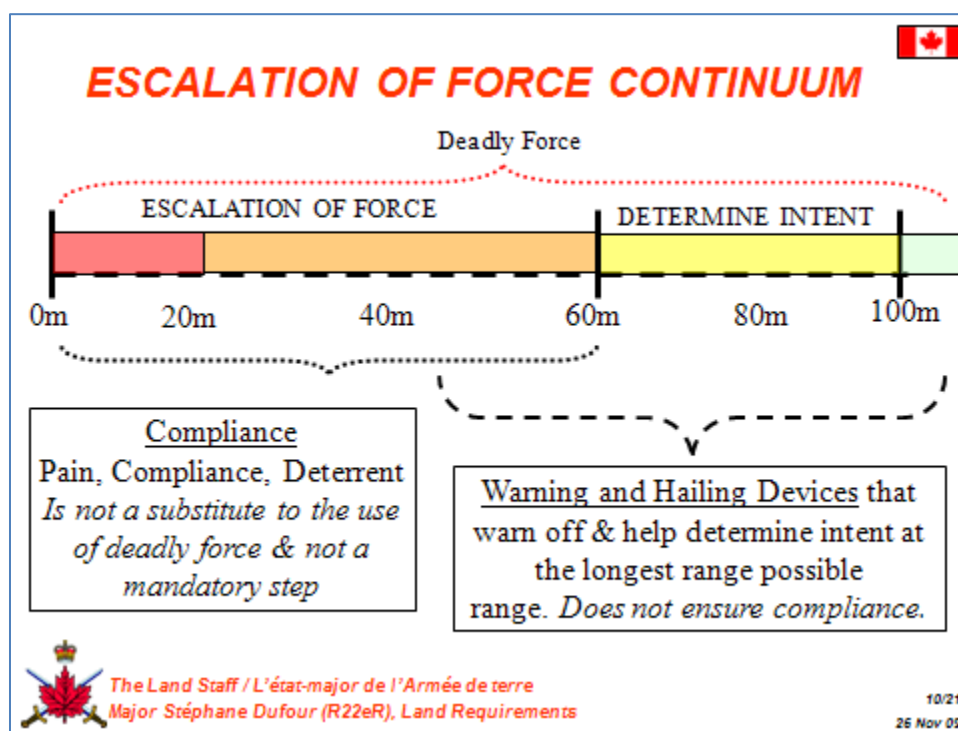


Figure 1 - Escalation of Force Continuum
Source: Dufour, *Canadian Army: Non-Lethal Requirements*, 10.

Within an operational context, performing the escalation of force process can be a very complex and difficult cognitive process to execute especially when considering that, in most cases, civilian casualties become a national and media incident. As such, an alternative to deadly force might be considered as an effective compromise. The counter-argument is that NLWs provide one additional step within an already compressed decision-action cycle. This would be made even more difficult if the soldier was forced to change weapons or change ammunition. These criticisms have been raised by opponents of NLWs; however, soldiers operate within a team or section concept that

²⁵ The effective operating range of the 40mm sponge grenade is 5-40 meters while the 12 gauge bean bag round has an effective operating range of 5-25 meters. Clearly, it would be optimal that the range be extended to reach 100 meters.

provides mutual support, which allows for the combination of lethal and non-lethal capabilities. As such, the infantry section would be able to react to an operational scenario in accordance with the escalation of force process and within the same timeframe.

Justifying the operational requirement for NLWs has been complicated because there is a lack of documentation that details the operational imperative for an alternative level of force. Therefore, it was important that this paper compile a series of case studies as a means to examine this deficiency; these will be discussed later. Shockingly, the Army Lessons Learned Centre has no record indicating an operational requirement for NLWs in their database of observations and lessons learned. As well, they have received no feedback on the operational employment of the laser dazzlers employed by the Canadian Army in Afghanistan since 2009. This is difficult to fathom considering that the Army's procurement staff and the media made a concerted effort to highlight the operational imperative for NLWs as an alternative to lethal force.

THE FUTURE SECURITY ENVIRONMENT

The primary focus of this section will be on the Canadian perspective of the future security environment, and whether the anticipated challenges and threats support the employment of NLWs. An important question will be whether the use of NLWs provides a credible capability within the future security environment, which is predicated on circumstances of volatility and uncertainty. The discussion will also consider whether the employment of NLWs enhance or inhibit the achievement of political and military objectives in the future. These are important questions that need to be considered when evaluating the merits of pursuing a robust NLWs program.

The *Canada First Defence Strategy* provides the six core missions for the CF that include:

- (1) the conduct of domestic and continental operations;
- (2) the support to a major international event;
- (3) the response to a terrorist attack;
- (4) the support to a domestic crisis or natural disaster;
- (5) the conduct of deployed operations for an extended period; and
- (6) the deployment in response to international crises.²⁶

Furthermore, this strategy reinforces that the CF remains a key element of the government's response. As well, the CF must be "a fully integrated, flexible, multi-role and combat-capable military", so that it is poised to "address the full range of defence and security challenges facing Canada now and into the future."²⁷ Chief Force Development (CFD) has issued two key documents: *The Future Security Environment 2008-2030*²⁸ and the *Strategic Threat Scenarios*²⁹ both of which prove useful in preparing the CF for the challenges and risks in the modern and complex operating environment. It was stated that "weapons that postpone the decision to use deadly force will play an

²⁶ Department of National Defence, *Canada First Defence Strategy*. Ottawa: DND Canada, <http://www.forces.gc.ca/site/pri/first-premier/defstra/summary-sommaire-eng.asp>; Internet; accessed: 3 February 2012.

²⁷ *Ibid.*

²⁸ Department of National Defence, *A-FD-005-001/AF-001 The Future Security Environment 2008-2030. Part 1, Current and Emerging Trends*. (Ottawa: DND Canada, 27 January 2009).

²⁹ Dr Peter Dobias, *Non-Lethal Weapons Capability Based Analysis*. Technical Memorandum TM 2011-173, Defence R&D Canada – Centre for Operational Research and Analysis, October 2011. 3-4.

increasingly important role in asymmetric warfare.”³⁰ It also recognizes that there are second order benefits as discussed below:

Though developed primarily for non-combat operations, such as crowd control, non-lethal capabilities may see increased use in combat operations. For instance, a variety of technologies, including heat- or sound-based weapons, air-burst munitions and anti-traction material can be used to temporarily disable a target without causing permanent harm. Given this option, military commanders will be in a better position to apply force selectively in line with strategic requirements, which may involve minimizing collateral damage or winning hearts and minds of a skeptical population.³¹

According to the future security environment (FSE) the future of armed conflict will be characterized by conditions of “uncertainty and volatility”. More importantly, the FSE outlines the trends and risks that will shape the future of military operations. Specific to the argument of NLWs, the CF must consider the current and emerging trends associated with developments in the fields of science and technology, as well as, military and security trends.³² NLWs are considered to be a “significant sub-set of future advanced weapon systems”³³ that “may see increased use in combat operations.”³⁴ Moreover, the future battle-space will be a complex operating environment where the preponderance of conflict will occur in densely populated urban areas, and thus, there is a requirement to balance the outcome of military operations with the desired political

³⁰ *The Future Security Environment 2008-2030. Part 1, Current and Emerging Trends.* 96.

³¹ *Ibid.*, 97.

³² The other threats and emerging trends include: economic and social trends, environment and resource trends, and geopolitical trends that “may affect the CF’s ability to remain strategically relevant, operationally responsive, and tactically decisive in the years to come.” *Ibid.*, 6-7.

³³ *Ibid.*, 82.

³⁴ *Ibid.*, 97.

objectives.³⁵ Therefore, there is implicit and explicit support for the employment of NLWs based on CFD's FSE.

To mitigate these risks and challenges, the CF must work towards developing a force that remains relevant and operationally capable of conducting full spectrum operations within the FSE. The criteria for success requires that the future CF becomes adaptive and agile such that they are able to respond to terrorist and asymmetric threats, embrace technology, and respond to domestic incidents. Moreover, the CF must be capable of a rapid transition across the continuum of operations, which embraces the concept of the *three-block war* where troops are conducting peace support and combat operations simultaneously.³⁶ It is envisaged that the CF must become an agile, multi-purpose force, that is net-enabled and capable of conducting full spectrum operations and can engage the adversary with precision lethal and non-lethal capabilities.³⁷ While some critics believe that NLWs are limited to humanitarian and peace support operations, Colonel John A. Warden III, USAF, explained that NLWs complement the concepts of lethal and conventional forces in twenty-first century warfare:

The advent of nonlethal weapons technology will expand our options over the full spectrum of war. These new weapons will find application against communications, artillery, bridges, and internal combustion engines, to name but a few potential targets. And of greatest interest, they will accomplish their ends without dependence on big explosions that destroy more property than necessary and that cause unplanned human casualties. Can these weapons replace traditional lethal tools? In theory they can, as long as we accept the idea that war is fought to make the enemy do your will. What we will surely find, however, is that these weapons give us

³⁵ Department of National Defence. *B-GL-310-001/AG-001 Land Operations 2021: Adaptive Dispersed Operations. The Force Employment Concept for Canada's Army of Tomorrow*. (Kingston: DND Canada, 2007), 7.

³⁶ *Ibid.*, 7.

³⁷ *Ibid.*, 18.

operational concepts and opportunities well beyond what would be possible if we merely substitute them for conventional weapons.³⁸

The discourse surrounding force protection measures are typically associated as being either: active or passive; kinetic or non-kinetic; and, lethal or non-lethal. However, NLWs can be complementary to the application of lethal weapons and should not be considered mutually exclusive to the use or deterrent of deadly force. As an interim measure of force that straddles the spectrum between non-deadly and deadly force, these weapons can assist with de-escalation of situations, as well as, provide an alternative to deadly force. The benefit of an interim level of force is that soldiers can achieve their operational mission without jeopardizing strategic and political objectives.

CFD postulated within the FSE that the CF will continue to find itself in a resource and budget constrained environment, which is anticipated to continue for the foreseeable future. Therefore, it cannot seek to adopt a complete suite of weapon systems that are developed outside of the realities of the budgetary envelope.³⁹ Moreover, it is recognized that technology will continue to impact the development of weapons, doctrine and the modern operating environment; however, the CF's procurement process has demonstrated that it is unable to match the pace of technological advancement. Therefore, it is suggested that the CF focus on mature concepts, while maintaining an awareness of future trends and threats. The alternative to ignore technological advancements would be "myopic" and accept "a clear path to irrelevance."⁴⁰

³⁸ Col John A. Warden III, "Employing Air Power in the Twenty-first Century", Chapter 5 in Richard H. Shultz, Jr. & Robert L. Pfaltzgraff, Jr. (eds), *The Future of Air Power in the Aftermath of the Gulf War*. Maxwell AFB, AB: Air University Press, 1992. http://aupress.au.af.mil/digital/pdf/book/Shultz_Future_of_Airpower.pdf; Internet; accessed 1 May 2012.

³⁹ *B-GL-310-001/AG-001 Land Operations 2021: Adaptive Dispersed Operations*, 39.

⁴⁰ *Ibid.*, 39.

In conclusion, CFD recognizes a need for NLWs within the future security environment due to the threats and challenges faced by the CF. Agencies responsible for the procurement and force employment process, as well as, the research and development process must consider the current and future threat environments. Ultimately, the CF must proactively embrace those technologies, such as NLWs, that may become “a fundamental enabler that allows soldiers to remain effective in the evolving security environment.”⁴¹ The future battle-space will take place within densely populated urban environments, and according to CFD, our soldiers need to be properly equipped for these environments with both lethal and NLWs.

THE LAWFUL EMPLOYMENT OF NLWs

The primary focus of this section is the examination of the Canadian legal issues that govern the use of force for the CF during domestic and international missions. Although regulatory in nature, the legal considerations may become critical obstacles that limit the possibility for the employment of NLWs as an alternative to lethal force. The discussion will serve to determine whether their employment is congruent with the CF’s mandate.

The legal framework and the over-arching policy documents are the basis of the CF’s mandate to participate in international and domestic operations. The most important differences between international and domestic operations are those laws that authorize and limit the use of force. As such, this includes a review of these statutes, directives and policies in order to determine the suitability of employing NLWs while conducting operations. It was found that that there are restrictions that limit their

⁴¹ *Ibid.*, 39.

employment by the CF while conducting domestic operations. Therefore, a significant portion of this review will focus primarily on the CF's mandate to participate in domestic operations and whether any restrictions would limit the employment of NLWs while conducting domestic operations.

The legal statutes that govern the CF's participation in international operations are the Geneva Conventions, the Laws of Armed Conflict (LOAC), and the Rules of Engagement (ROE). These treaties and statutes of customary *International Law* provide our legal basis for participating in military operations abroad. One of the fundamental legal principles involves the *Martens Clause*, which states that "in any armed conflict the right of the parties to the conflict to choose methods or means of warfare are not unlimited".⁴² This principle is based upon several concepts including rules that limit armed conflict to military necessity, determine the legitimacy of military targets, and govern the conduct of operations to an established code of rules. From a legal standpoint, these rules provide the framework on when and why States may resort to the use of force (*Jus ad bellum*), as well as, the means and methods by which States must conduct hostilities during armed conflict (*Jus in bello*).⁴³

The ROE are orders issued by a competent military authority that directs the circumstances and limitations within which force may be applied to achieve the military mission. The legal frameworks upon which the ROE are developed include the United Nations Charter, the United Nations Security Council Resolutions, International Humanitarian Law, the LOAC, as well as, Canada's domestic law and the host nation

⁴² Major Phil Drew, "Legal Obligations Affecting the Use of Force" (lecture, Canadian Forces College, Toronto, ON, Canada, 25 January 2012), slide 4.

⁴³ Major Phil Drew, "Command: The International Law Context" (lecture, Canadian Forces College, Toronto, ON, Canada, 17 November 2011), slide 2.

laws. Overall, the ROE provide the legal authority to use force while deployed and specifically define the incidents that would constitute a hostile act or hostile intent. These subsequently determine whether the soldiers respond with deadly force or non-deadly force. Effectively the ROE provide limits, be they permissive or restrictive in nature that permit soldiers to defend mission essential personnel, equipment and property. CF soldiers require ROE for all international operations, as well as, domestic operations.⁴⁴ The ROE are mission-specific based on the operational theatre and must also stipulate employment parameters for all weapons systems, including NLWs.

The employment of NLWs on international and domestic operations is equally governed by the legal statutes that govern warfare. The weapons that are procured and issued to CF soldiers have been deemed to be lawfully acceptable, having been reviewed by legal, medical and policy experts before they are provided to the soldiers. Therefore, a soldier can be confident that the weapons and ammunition issued to them comply with the LOAC; however, they must employ their weapons and ammunition in a manner that complies with the LOAC.⁴⁵ Equally, it is important that the development and acquisition of new weapons and ammunition determine that they are lawfully acceptable within the accepted means and methods of warfare. This step determines that the *means* (read weapons and ammunition) and *methods* (their intended employment) complies with the LOAC. Specifically, any weapon or ammunition that causes superfluous injury and unnecessary suffering would be deemed unlawful under the LOAC and, thus,

⁴⁴ Lieutenant-Commander Robert Smith, “The Use of Force in CF Operations” (lecture, Canadian Forces College, Toronto, ON, Canada, 31 January 2012), slide 29.

⁴⁵ Major Andy Van Veen, “Legal Factors Affecting the Selection and Employment of Weapons” (lecture, Canadian Forces College, Toronto, ON, Canada, 25 January 2012), slide 3.

unemployable.⁴⁶ Therefore, the Minister of National Defence becomes the final step of approval for determining the lawful employment of the weapons and ammunition, which also includes NLWs.

In comparison to international operations, the legal framework upon which the CF conducts domestic operations is largely influenced by the Criminal Code of Canada. Moreover, the most important consideration is that the CF does not have a standing mandate to enforce the laws of Canada, which remains a police enforcement role. That being said, there are specific legal authorities and inter-departmental agreements through which the CF may engage in domestic operations and be authorized to provide assistance to law enforcement agencies (ALEA) in the execution of their mandate. The legal authorities include: the Crown Prerogative, Governor in Council Directives, Ministerial Orders and Directives, Memorandums of Understanding with Other Government Departments, as well as, legislation, orders and regulations. The most important legislative authority remains the *National Defence Act*, which authorizes the CF “to perform any duty involving public service” and “to provide assistance in respect to any law enforcement matter.”⁴⁷ This statement seems to imply that the CF has a fairly open and unrestricted mandate; however, that is not the case because the actual employment of the CF is restricted to the support of other lead agencies.⁴⁸ Furthermore the CF’s

⁴⁶ *Ibid.*, slides 5-6.

⁴⁷ Drew, “Command: The International Law Context,” slide 17. This specific statement can be found within the *National Defence Act*, Section 276.6.

⁴⁸ The CF acts in a supporting role to other government departments in accordance with the Federal Emergency Response Plan (FERP). The departmental responsibilities are tabled in Annex A to the Emergency Support Functions.

mandate and powers while conducting domestic operations are limited by the fact that Canada is a liberal democracy⁴⁹, which is explained below:

Military forces in democracies are subordinated to the elected civil authority and are prohibited from operating outside the bounds of jurisdiction set by that authority. In addition to combat operations, they are often used for domestic missions such as search and rescue, assistance to other government departments and agencies, aid of the civil power, and for disaster relief operations both at home and abroad. However, despite the inherent flexibility and domestic utility of modern military forces, their *raison d'être* remains armed conflict. This distinction separates the military forces from other security arms of the government such as the police and border patrol.⁵⁰

The employment of the CF is considered as a 'force of last resort' and "normally used only when other instruments of national power have failed or are at risk of failing to protect national interests."⁵¹ In order to comply with and respect the Criminal Code of Canada there must be consideration that CF personnel be granted peace officer status, especially if there is a determination that there will be a potential for the use of force. An example would be that the CF may not require special status while providing certain types of public services; however, this will be an important consideration for ALEA tasks and Aid of the Civil Power operations. This does not imply that CF personnel tasked in

⁴⁹ This is similar to other liberal democracies that have a tradition of distrust of large standing forces; Canada limits the employment of the CF to unique military skill-sets and not law enforcement-type tasks. The *Possee Comitatus Act* and the *King George Act* restrict the employment of active service units for domestic operations in the United States and the United Kingdom, respectively. The 101st Airborne Division was deployed to assist the law enforcement agencies and the National Guard during the riots in Los Angeles following the verdict of the Rodney King beatings in 1992. The employment of Active Service, Title X forces, required a Presidential Order under the *Insurrection Act* for them to deploy in order to restore peace and order as part of a domestic operation.

⁵⁰ Department of National Defence. *B-GJ-005-000/FP-001, CFJP 1.0 – Canadian Military Doctrine*. (Ottawa: DND Canada, April 2009). 2-2.

⁵¹ *Ibid.*, 2-2.

support of domestic operations will be employed as a police officer, but rather that they will be granted legal status and protected from Civil and Criminal liabilities.⁵²

The CF may be requested to act to support ALEA and Aid of the Civil Power tasks when the civilian forces are deemed inadequate or unavailable to deal with a riot, disturbance of the peace or other domestic emergencies as specified within the *Emergencies Act*. According to Canada Command, the CF has been deployed in Aid of the Civil Power operations approximately 110 times since Confederation. Four of these operations have occurred since the conclusion of World War II and the most recent incident was the Oka Crisis in 1990.⁵³

The *National Defence Act (Part IV) Aid of the Civil Power* states that the CF will be responsible for “suppressing or preventing any actual riot or disturbance, or any riot or disturbance that is considered likely to occur.”⁵⁴ As well, the CF has a mandate to provide assistance to Corrections Canada and may be called upon to conduct “perimeter security or direct confrontation with inmates using whatever action is reasonably necessary to save or protect life.”⁵⁵ The employment of NLWs while supporting Corrections Canada may also prove advantageous during domestic operations. Therefore, there is a mandate for the CF to be prepared to conduct crowd confrontation tasks.

Deployments as part of the *National Emergencies Act* typically occur when all means of national power have been exhausted and dire circumstances exist such that the

⁵² Van Veen, *Legal Factors Affecting the Selection & Employment of Weapons*, slides 15 & 33.

⁵³ Department of National Defence. *Canada Command Direction for Domestic Operations – Interim Version VI*. (Ottawa: DND Canada, February 2006), 12-1/2.

⁵⁴ Van Veen, “Legal Factors Affecting the Selection and Employment of Weapons,” slide 30. This specific statement can also be found within the *National Defence Act*, Section 278.

⁵⁵ *Ibid.*, slide 32.

military would be called in to control a domestic emergency. It is recognized that the CF may appear as an attractive option during crisis response incidents because they offer an integrated command and control structure with inherent transport and communications; however, they are deemed to be the “*force of last resort*”. As such, the deployment and presence of soldiers may serve as a credible deterrent that de-escalates the situation and coerces the offenders to modify their behaviour; although, in some cases force may be required. The employment of the military as a ‘*force of last resort*’ typically implies that the CF will use deadly force. On the other hand, the use of force should not necessarily suggest that lethal force is the only option available, which unfortunately seems to be the overwhelming understanding and expectation of this term. According to the *Queens Regulations and Orders*, “lethal weapons must not be used for offences which are not serious and in no case shall firearms be discharged if less extreme measures will suffice”.⁵⁶ As such, it would appear that there is recognition for an interim level of force, which could be addressed by NLWs. Moreover, the term ‘*force of last resort*’ lacks precision and should be reviewed as a matter of study outside of this paper.

The employment of CF troops on domestic operations may lead to other concerns. Matters worth considering include whether the threat of deadly force is credible and realistic. Other concerns that need to be considered when authorizing the use of force and, in particular, the use of deadly force include the political constraints imposed upon the military, the potential to erode public support of the CF, and that the consequence of using deadly force against national citizens might aggravate situation as opposed to de-

⁵⁶ Department of National Defence. *Queen’s Regulations and Orders for the Canadian Forces, Volume I*, Chapter 23 Duties in Aid of the Civil Power, Article 23-15 Orders to Fire.

escalate the situation.⁵⁷ Thus, the application of military force should be considered only if there is an unconditional understanding that lethal force may be the outcome of deploying the CF in support of domestic operations. That being said, CF doctrine recognizes that the authority to use deadly force does not necessarily mean that it is direction to use deadly force, which may cause confusion.⁵⁸ As such, the CF might explore the rationale that an alternative level of force between non-deadly force and deadly force could be addressed by NLWs whereby soldiers are able to achieve a modicum of force protection and, more importantly, conduct crowd confrontation operations “confident that the constraints will not preclude achievement of the military and political objectives sought.”⁵⁹

This section discussed the context of the lawful employment of NLWs for both international and domestic operations. It was noted that employing the CF as a ‘force of last resort’ for domestic operations is governed by Federal statutes and, specifically, the Criminal Code of Canada. In summary, the lawful mandate that governs the commitment of the CF to conduct operations does not specifically state that NLWs must be used; however, the achievement of political objectives through the application of military force would be reinforced with a robust NLWs program that complements the deterrent of lethal force.

⁵⁷ Bruce Clarke, "Conflict Termination: A Rational Model." *Studies in Conflict and Terrorism* 16, no. 1 (1993), (Joint Command and Staff College Course 38, Activity Package C/DS544/OAP/LD-3, 2012), 42-43.

⁵⁸ *The Use of Force for CF Operations*. 2-4.

⁵⁹ Clarke, 43.

THE CF's DOCTRINE FOR CROWD CONFRONTATION OPS

Having discussed the legal obligations as they relate to the use of force on operations, the discussion will now consider whether the CF's mandate for domestic operations embraces crowd confrontation and NLWs. Unfortunately, these two elements have been inextricably linked as a common operational capability, which often clouds the argument for employing NLWs for domestic operations. This undermines the fact that NLWs capabilities can be used across the full spectrum of operations; unfortunately, the CF's perspective is that NLWs are suitable only for "controlling" crowds.⁶⁰ As previously stated, the CF would benefit from adopting an expanded role of employing NLWs across the full spectrum of operations.

The CF eliminated its crowd confrontation capabilities, in the mid-1990s, because it was deemed to be a police enforcement responsibility.⁶¹ Furthermore, the CF has not embraced an approach that values the operational requirement for NLWs as part of domestic operations, in order to separate itself from police enforcement tasks. It was stated that "there were a number of valid reasons at the time for adopting this policy"; however, the CF's experience on several international operations revealed that "threats to force protection when involved with crowds has demonstrated that this policy is not always possible in practice."⁶²

⁶⁰ The new Canadian doctrinal term for these operations is known as "crowd confrontation"; however, this term was previously known as "crowd control". In order to avoid confusion the term crowd confrontation will be used throughout the paper unless noted or when referring to US and UK doctrine.

⁶¹ Department of National Defence. *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operations*. (Ottawa: DND Canada, January 2008), 1.

⁶² *Ibid.*, 9.

The literature suggests that NLWs have an application across the full spectrum of military operations. More recently, it was recognized that the CF must also consider the need for training and equipping soldiers for crowd confrontation across the full spectrum of operations:

Whether in domestic operations, peacekeeping or combat operations, unanticipated crowd confrontations can occur, and forces must have the threshold training necessary to react to provide security for themselves and their operation. However, this training must not be confused for or expanded into training for a proactive role in suppressing riots or performing other police duties, which remain a law enforcement responsibility.⁶³

As a result of these reasons, there was a need to reassess the doctrine. The new Crowd Confrontation Operations (CCO) doctrine states that:

The original *Aid of the Civil Power Manuals* were rescinded in the 1990s and DCDS 2/98 *Guidance for the Conduct of Domestic Operations* specifically prohibited training by the CF for law enforcement duties such as riot and crowd control. However as a result of an increase in crowd confrontation incidents particular the Drvar Riots in 1998 in Bosnia Herzegovina, a perceived capabilities gap in the field of crowd confrontation incidents was identified between the current CF intermediate weapons capability and the use of deadly force.⁶⁴

The doctrine recognized that CF personnel had limited options as part of their ability to enforce self-defence and force protection measures. It was noted that:

The only alternative techniques or weapons involved the potential use of deadly force. There was no capability for the use of proportional force as part of any use of force continuum.⁶⁵

The CCO doctrine is relatively new and may not be well known across the CF. Also noteworthy, CCO is considered a unique operation similar to airborne operations,

⁶³*Ibid.*, 9.

⁶⁴*Ibid.*, 1.

⁶⁵*Ibid.*, 9.

airmobile operations, and amphibious operations.⁶⁶ Moreover, the doctrine is founded upon the premise of the future security environment that postulates that future conflict “will increasingly take place in urban environments with a correspondingly higher likelihood of the CF’s involvement in CCO for both international and domestic operations.”⁶⁷ As a result, refugee control and the separation of the civilian population from the enemy are deemed to be critical operational level planning considerations prior to ‘fix and strike’ operations in order to reduce civilian casualties and to maintain our freedom of manoeuvre. In addition, this approach is “consistent with NATO and the ABCA concepts for operating within urban environments.”⁶⁸

The CCO doctrine manual proposes a new terminology be adopted in order to avoid the bias and the reluctance to conduct police-type duties such as ‘*crowd control*’ and ‘*riot control*’, which are not suitable military roles. This may appear to be semantics; however, there is an important nuance between these terms and concepts. The logic for adopting the term “*crowd confrontation*” was explained as follows:

Consequently, the term Crowd Confrontation Operations is the overarching operational construct, which defines and describes the CF activities in this role. This new term helps to separate the perception of police duties from military tasks while maintain the concept of providing commanders and soldiers with the capability to deal with crowds that may interfere with their operations. In order to achieve this, the term CCO has been expanded to align with military operations in general, across the spectrum of conflict and the continuum of operations.⁶⁹

⁶⁶ *Ibid.*, 18.

⁶⁷ *Ibid.*, 16.

⁶⁸ The acronyms stand for North Atlantic Treaty Organization (NATO) and the American, British, Canadian, Australian and New Zealand Armies’ Program (ABCA). *Ibid.*, 12.

⁶⁹ *Ibid.*, 11.

The CCO doctrine stipulates that “unless CF personnel are ordered by a competent military authority, control and dispersal of crowds remain the sole responsibility of the police riot/crowd control forces.”⁷⁰ Nevertheless, this doctrine suggests that all three branches of the CF should carry out CCO training for base auxiliary security force tasks. This modern approach recognizes the threats of close interaction with crowds, as well as, the need for weapons and ammunition that provides an alternative to deadly force. This paper is not focussed on justifying the need for CCO, but rather the requirement for NLWs during the conduct of CF operations. The problem is that most discussions on CF domestic operations and NLWs typically get mired in the debate on crowd confrontation tasks. That being said, the new CCO doctrine supports the argument that there is a need for NLWs. Specifically,

From peace to armed conflict, there is increasing interest to have the ability to respond with measured force applicable to a given situation. Whereas deadly force is the norm in times of armed conflict, in more peaceful situations, the military, employed as a force of last resort, may desire a non-lethal response as part of the force escalation measures. Therefore, NLW become essential in order to expand the number of options available to commanders and a clear understanding of their capabilities and principles of employment which needs to be articulated for each CCO.⁷¹

This section discussed the context of employing NLWs, but it was noted that the CF struggles to understand how NLWs prove useful across the full spectrum of operations. As a result, the CF limits the employment of NLWs to crowd confrontation operations. In summary, the CF’s new doctrine attempts to re-establish the ability to operate in close proximity to urban environments and employ appropriate weapon systems (be they lethal or non-lethal) commensurate with the threat.

⁷⁰ *Ibid.*, 19.

⁷¹ *Ibid.*, 19.

HISTORICAL CASE STUDIES AND MODERN OPERATIONAL SCENARIOS

This section highlights several modern case studies based on the CF's experience in domestic and deployed operations where the employment of NLWs could have been a useful interim response between the application of non-deadly force and deadly force. These case studies are listed in chronological order to illustrate that there have been several occasions where the status quo is not adequate to address the operational scenarios encountered by our soldiers (see Table 1 below). This section will not conduct an alternative historical review of each incident but rather highlight issues and considerations that would support the development and employment of NLWs during the conduct of CF operations.⁷²

Table 1 – Historical Case Studies Justifying the Operational Need for NLWs.

<p>1. The OKA Crisis, 11 July-29 August 1990. The CF deployed in Aid of the Civil Power in order to address uprisings by the First Nations in Ontario and Quebec. The Native Warriors were well armed and confronted local law enforcement agencies in a nine-hour gun-battle. Overall, “the civil police was completely unprepared for the violence that they encountered.”⁷³ This incident prompted the Solicitor-General of Canada, who in turn, requested the Minister of National Defence to provide military assistance to the Royal Canadian Mounted Police.⁷⁴</p>

⁷² This is a similar approach taken from David Koplow's book *Non-Lethal Weapons: The Law and Policy of Revolutionary Technologies for the Military and Law Enforcement*. (New York: Cambridge University Press, 2006).

⁷³ Colonel Bernd Horn. *From Cold War to New Millennium: The History of The Royal Canadian Regiment, 1953-2008*. Toronto: Dundurn, 2011. 173.

⁷⁴ *Ibid.*, 170-171.

a. The CF's orders for this mission were stipulated as follows:

...to be confined to provision of armoured vehicles for transport and protection of police personnel, mobile VHF/UHF secure communications for Law Enforcement Agencies use and any non-lethal operational support requested to ensure success and safety of personnel involved.⁷⁵

b. Operation SALON was the CF's response to the Oka Crisis that occurred in Akwesasne and Kanasatake. The incident was sparked due to native land claims, but evolved from civil disobedience into a violent and deadly stand-off between the Native Warriors, Law Enforcement Agencies and the CF. Some of the key observations are as follows.

c. The CF lacked several critical issues: proper equipment to deal with crowds and the requisite training, as well as, clear rules of engagement. It was reported that:

Two significant issues were downplayed, or overlooked, depending how one wishes to describe it that would have tremendous effect on the soldiers. The first was the absence of crowd control training or equipment. In the mid-1980s the CF had cut crowd control from its responsibilities, determining that it was a task that was best left with the LEA. As a result, the CF no longer had doctrine, training or equipment to address the matter. The second issue was the lack of understanding of clear easily understood RoEs for Operation Salon. The operation was guided by two principles that seemed easy enough in theory, but proved difficult in the acid test of real operations. The first principle was the use of minimum force. The second was the oft-publicized declaration that the CF would under no circumstances fire the first shot.⁷⁶

d. The chain of command recognized the political sensitivities of this situation and restricted the use of force. Lieutenant-General Kent Foster, Commander of the Army, directed that:

Canadian soldiers were ordered not to fire first, in effect telling

⁷⁵ *Ibid.*, 171.

⁷⁶ *Ibid.*, 175.

soldiers that one of them would take the first bullet as a casualty. This legitimate restriction through the chain of command ensured that the use of force on the military side stayed controlled toward peaceful resolution of the dispute. Self-defence, in the Canadian context, has unique connotations for military commanders and soldiers participating in domestic operations.⁷⁷

- e. The CF troops were opposed by violent crowds that consisted of males, females and children, which created a strategically sensitive situation whereby the soldiers were effectively handcuffed from taking action. Overall, the soldiers were not prepared for “crowd control” operations according to their Commanding Officer.⁷⁸
- f. The soldiers did not have the equipment or the means to create the stand-off necessary to protect them from the crowd. As a result, many soldiers were injured during the OKA Crisis due to close quarter interaction with the hostile crowd. There were several instances where the soldiers and crowds actually engaged in hand-to-hand combat. Another incident left “22 soldiers injured, nine of whom required serious medical attention” and approximately 75 Mohawks were “treated for minor injuries, broken bones and gas inhalation.”⁷⁹
- g. In one incident, the officers issued fire orders that identified the ringleaders within the crowd, which ultimately diffused the situation and caused the crowd to disperse.⁸⁰ This may suggest that lethal force is the most effective tool to deal

⁷⁷ Dr Chris Madsen, “Military Law and Operations” (Aurora, ON: Canada Law Book, 2008), 7:40.10.

⁷⁸ Horn, 185.

⁷⁹ *Ibid.*, 183-187.

⁸⁰ *Ibid.*, 187.

with crowds; however, studies on crowd behaviour and the employment of lethal force indicate that armed riots generally escalate and lead to substantially higher levels of provocation especially when considering domestic operations. In contrast, the use of NLWs “allow for more control of the situation because [soldiers] were able to intervene at an earlier stage in the process.”⁸¹

- h. The CF displayed courage, self-discipline and professionalism throughout the operation. It was stated that “Oka was quite interesting trying to balance all of the political sensibilities and the military task.”⁸²
- i. The Commanding Officer stated that:

We reflected positively on the way Canada will go into the next decade. If we had blown it – if people had been killed or if we had lost control of the situation – we would have spent the next 10 years crisscrossing the country putting out fires. I hope this can now be avoided.”
- j. The Oka Crisis was a complex domestic situation that clearly had the potential to deteriorate. The closing comments by the Commanding Officer serve as a warning that the CF should recognize the need to address the operational requirement for an alternative to lethal force that remains extant today.
- k. This situation illustrates the political complexities of domestic operations and the potential, similar to the FLQ Crisis that occurred 20 years earlier, that the death of a Canadian/Quebec citizen could have provoked political discontent among the Native and French populations.

⁸¹ Lieutenant (LAPD) Sid Heal, “Nonlethal Options: Futures and Failures” Annex F in *The City's Many Faces: Proceedings of the RAND Arroyo- Urban Operations Conference, April 13-14, 1999*. http://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF148/CF148.appf.pdf; Internet; accessed 13 February 2012. 175-176.

⁸² Horn, 188.

2. UN Operations in Somalia, 1992-1995.

- a. CF's participation in Op DELIVERANCE, 1993 – The intent of this case study is not to discuss the political fall-out of the Somalia Inquiry and the impact to the CF, per se, but rather focus on the fact that the soldiers did not have the right equipment, in terms of “crowd control”, anti-riot gear, shields, tear gas, etc.⁸³
- b. The Somalia Board of Inquiry noted that there was a need for “an intermediate level of force” based on their investigation. One of the soldiers reported that “we didn't have the right equipment, in terms of crowd control, anti-riot gear, shields, tear gas, and stuff like that”.⁸⁴ It was also reported that warning shots were often ignored, and thus, “the next step becomes firing at a person”.⁸⁵ The findings of the Board of Inquiry indicated that “the Canadian soldiers dealt with this difficulty by introducing shot guns which sprayed a crowd enough to deter it without causing serious injury”.⁸⁶
- c. Operations in Somalia served as the genesis for the establishment of the US military's NLW program. On several occasions, the US military forces were overrun by crowds of civilians and refugees seeking food from the UN and UNHCR compounds. The soldiers needed a method to address civil disobedience while deployed because they were not authorized lethal force for these situations. As a

⁸³ Donna Winslow, *The Canadian Airborne Regiment in Somalia: A Socio-Cultural Inquiry*. (Ottawa: Minister of Public Works and Government Services Canada, 1997). 202.

⁸⁴ *Ibid.*, 202.

⁸⁵ *Ibid.*, 202.

⁸⁶ *Ibid.*, 202.

result, it was determined that the most effective means of dealing with these crowds was by adopting a measured response that included NLWs and avoided escalating the situation and suffering.

- d. On the second deployment to Somalia in 1995, the US military forces were more culturally savvy and recognized that the suffering of the refugees did not constitute a military threat. As such, the US Marine Corps were equipped with ‘riot control’ equipment and a suite of NLWs. The objective was achieved because the troops were now able to successfully balance the requirements for their force protection commensurate with the need to establish civil order in a respectful manner.

Ultimately, the Commanding General, General Zinni, was so impressed with the operational effects that he stated that the successful use of NLWs had effectively created an evolution in military affairs. It was “General Zinni’s aggressive support for NLWs that added credibility to the effort to field NLWs”.⁸⁷ Moreover, Zinni stated that “he would never go on another peace support mission without them [NLWs] and that there was an urgent need for more such weapons.”⁸⁸

- e. As a direct result of operations in Somalia, the US Department of Defense recognized the need to institutionalize the procurement and employment of NLWs. The Secretary of Defense directed that the USMC be appointed as the lead organization within the armed services known as the Joint Non-Lethal Weapons Directorate (JNLWD) in 1996. More importantly, the US Department of Defense

⁸⁷ Lieutenant-Colonel Erik Nutley, USAF, “*Non-Lethal Weapons: Setting our Phasers on Stun?*” Air War College, Center for Strategy and Technology, Occasional Paper No 34 (August 2003). Journal on-line; available from <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA463432>; Internet; accessed: 14 February 2012.7.

⁸⁸ Ibid., 7.

issued over-arching guidance on the development, acquisition and employment of NLWs, which served as the cornerstone for creating a joint program office responsible for this capability. Specifically, *Directive 3000.3 Policy for Non-Lethal Weapons* was first released in July 1996 and was revised in November 2003.⁸⁹ This directive created the institutional foundation for the general introduction of NLWs; however, according to Major-General Peter Chiarelli it has taken almost 15 years for the US military to recognize the cultural shift of employing NLWs in order to achieve tactical and strategic objectives.⁹⁰

- f. Operations in Somalia are identified as the central reason why the US adopted an integrated NLW program; however, in contrast, the CF still does not have any over-arching policy or guidelines that govern the use of NLWs.

3. **The Drvar Riots, Bosnia, 24-25 April 1998.** The UN peace keeping mission transitioned to a NATO peace enforcement mission in order to enforce the *Dayton Peace Accords*. The Stabilization Force (SFOR) Bosnia was responsible for several tasks including framework patrols, community reconstruction tasks, as well as, the repatriation of displaced persons, refugees, and evacuees (DPRE).⁹¹

- a. 1 RCR Battle Group responded to an incident of civil disobedience where Croats were looting the offices of UN officials including the UN High Commissioner for

⁸⁹ US Department of Defense. *Directive 3000.3 Policy for Non-Lethal Weapons*. Dated 9 July 1996 and revised 21 November 2003. <http://www.dtic.mil/whs/directives/corres/pdf/300003p.pdf>; Internet; accessed 15 January 2012.

⁹⁰ Scott, 22.

⁹¹ Horn., 234.

Refugees (UNHCR), the Organization for Security and Co-operation in Europe (OSCE), as well as, endangering the local fire fighters and Serb DPRES.⁹²

- b. The mob quickly grew in excess of 500 Croats, including men, women and children. Many were armed with long-barrelled shotguns, knives, baseball bats, rocks and other weapons. As the situation deteriorated, the Canadian soldiers fired warning shots from 9mm pistol, C7 rifle and their armoured vehicle's C6 machine gun, which went unheeded. Worse, the Canadian soldiers were so overwhelmingly outnumbered that the crowd actually laughed at the warning shots.⁹³ It was not until the soldiers fired the .50 calibre machine gun that the crowd took notice and commenced to disperse. This proved to be the only means to seize the initiative, although this weapon was not authorized for delivering warning shots.
- c. The following day, Multinational Divisional Headquarters-Southwest (MND-SW) deployed the Royal Green Jackets in full riot control gear. Their task was to deal with the aftermath of the riots, as well as, to reinforce the Canadian Battle Group that did not have riot control equipment or the requisite training.
- d. It is important to note that the recent release of CF joint publication on crowd confrontation sites the Drvar Riots as the catalyst for re-introducing the doctrine of working with large crowds. *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operation* states that:

As a result of an increase in crowd confrontation incidents experienced by the CF in international operations, and in particular the Drvar Riots of 1998 in Bosnia-Herzegovina, a perceived

⁹² *Ibid.*, 237.

⁹³ Discussion with Major Bryan Bedard, 6 February 2012, who was awarded a Mention in Dispatches for his actions to protect and extricate the Serbs to a safe area.

capabilities gap in the field of crowd confrontation incidents was identified between the current CF intermediate weapons capability and the use of deadly force.⁹⁴

e. David Pugliese, a known defence analyst for the Ottawa Citizen, reported that:

Senior military officials had discussed obtaining non-lethal weapons after incidents during the 1993 mission to Somalia and the 1996 peacekeeping mission in Haiti. In both those operations, Canadian soldiers faced large unruly crowds, which, in some cases threw rocks and other projectiles at troops. But plans to buy non-lethal weapons were never put in place. In fact, in 1996 the Canadian Army got rid of all of its riot-control equipment since it determined that such “internal security” gear would not be needed as civilian police would handle any crowd control incidents within Canada.⁹⁵

f. The Pugliese article reported that General Maurice Baril, the Chief of Defence Staff was concerned that these soldiers were almost killed by the mob. As well, Baril stated that the soldiers did not have the proper equipment to deal with the mob and there was “nothing in-between (firing) warning shots and killing (rioters).”⁹⁶

g. This situation highlights that Canadian soldiers may be required to conduct crowd confrontation tasks while deployed abroad. More importantly, this situation illustrates that the level of violence may escalate and overwhelm our soldiers.

4. **NATO operations in Kosovo, Op ALLIED FORCE, March 2000.** Following the NATO air campaign to halt Serb aggression and ethnic cleansing in Kosovo, NATO forces deployed as part of a follow-on ground campaign in order to secure Kosovo. The

⁹⁴ Department of National Defence. *B-GJ-005-307/FP-090, CFJP 3.16 – Crowd Confrontation for CF Operation*. (Ottawa: DND Canada, January 2008). 1.

⁹⁵ *Ibid.*, A3.

⁹⁶ *Ibid.* A3.

Kosovo Force (KFOR) was involved in several operations designed to stabilize the humanitarian crisis and, more importantly, to separate the ethnic Kosovar and Serb populations. The Canadians were tasked to augment the French and British forces deployed in the town of Mitrovica. 1 RCR Battle Group was tasked to assist the Royal Green Jackets to block the movement of a Kosovar mob from crossing into a Serb ethnic area.⁹⁷

- a. The Canadians were initially informed that they would be supporting other KFOR troops and not engaged in “crowd control” operations. This was important because the Canadians did not have any riot control equipment and they did not have any training to deal with this specific type of scenario. However, once they were deployed and the as the situation deteriorated they were subsequently re-tasked to contain a crowd that was estimated to number approximately 150,000. Despite the obvious dilemma, the Canadian soldiers distinguished themselves for their restraint and tenacity and were awarded a Commander’s Commendation from the Commander of the KFOR Multi-National Brigade (Centre).⁹⁸
- b. David Pugliese reported that “military officials finally ordered a review of the military’s riot-control rules and whether there was a need to buy non-lethal weapons after the confrontation in Kosovo”.⁹⁹ However, it would be

⁹⁷ The Royal Canadian Dragoons. “*OP Kinetic December 1999 - June 2000*”. <http://www.dragoons.ca/kfor.html>; Internet; accessed 13 February 2012.

⁹⁸ Army Forums. “*1 RCR BG Pioneers in March 2000 at the Austerlitz Bridge in Mitrovica, Kosovo*”. <http://forums.army.ca/forums/index.php/topic,98142.25.html>; Internet; accessed 13 February 2012.

⁹⁹ David Pugliese, “Mob Almost Killed 18 Troops in Bosnia: Lack of Non-Lethal Weapons Nearly Backfired,” *The Ottawa Citizen*, 29 December 2001, A3; <http://search.proquest.com/docview/240512972?accountid=9867>; Internet; accessed 15 January 2012.

approximately nine years before any NLW capabilities were provided to soldiers for deployed operations.

- c. This situation, once again, highlights that Canadian soldiers may be required to conduct crowd confrontation tasks while deployed even though they may be numerically out-numbered and without the requisite training and equipment required for this type of task.

5. **Terrorist Threats to Canada since 9/11.** The modern threat from terrorist action is still extant according to the Canadian Security Intelligence Service, Public Report 2009-2010, which states that “Islamic jihadists, eco-extremists, aboriginal extremists and other issue-motivated groups in Canada, though very small in number, can encourage, threaten and support serious acts of violence.” Furthermore the threat from these groups is assessed that they “could adopt a more violent and destructive strategy to achieve their desired results.”¹⁰⁰

- a. As well, there are concerns that there may be First Nations uprisings similar to the Oka Crisis. Civil disturbance and unrest amongst the First Nations populations remain a politically charged and sensitive issue that requires a graduated response commensurate with the level of force.¹⁰¹
- b. As such, this is another scenario where the employment of NLWs could address the operational requirement for controlling hostile crowds, provide adequate force

¹⁰⁰ Public Works and Government Services Canada. *Canadian Security Intelligence Service: Public Report 2009-2010*. PS71-2010. (Ottawa: PWGSC, 2010). 12.

¹⁰¹ Matt Gurney, “Chief Stewart Phillip Warns of a ‘Native Uprising’ Unless The Federal Government Does Better.” *National Post*, 25 January 2012, A4, Journal on-line; available from <http://fullcomment.nationalpost.com/2012/01/24/matt-gurney-a-native-uprising-isnt-likely-but-its-possible>; Internet; accessed 25 January 2012.

protection measures and provide an alternative to lethal force.

6. **CF Operations in Afghanistan, 2002-2011.** The CF has been conducting operations in Afghanistan since February 2002 as part of the International Security Assistance Force (ISAF). The CF contribution as part of a NATO mission is designed to assist the nation of Afghanistan to become a secure and functioning democracy. The CF mission has consisted of several key organizations including: the formation level headquarters, an Infantry Battle-Group, the Kandahar Provincial Reconstruction Team, the Operational Mentor and Liaison Team and a National Support Element. All of these soldiers have operated “outside the wire” and have worked in close proximity with Afghan local nationals, as well as, the Taliban/Insurgents. This case study will illustrate how difficult it can be for soldiers to function in a high-threat operational scenario where the risks and consequences of death are very real.

- a. On 29 July 2008, a vehicle was engaged by the main armament of the LAV III, which resulted in two Afghans killed and two injured; the tragic death of two children became national news.¹⁰² This incident was one of the most prominent instances of civilian casualties caused by Canadian soldiers while deployed in Afghanistan. When interviewed later, the grieving father stated that he wanted to “kill Canadian soldiers”.¹⁰³ This incident illustrates that the application of lethal

¹⁰² CanWest MediaWorks Publications Inc., “Canadians Kill Two Children at Afghan Checkpoint,” *Edmonton Journal*, 29 July 2008; <http://www.canada.com/theprovince/story.html?id=ce5e24b3-61f7-467d-9111-771cc90d6f1e>; Internet; accessed 3 February 2012.

¹⁰³ CanWest MediaWorks Publications Inc., “‘I want to kill Canadians,’ says Afghan whose children died in shooting” *The Ottawa Citizen*, 1 August 2008; <http://www.canada.com/ottawacitizen/news/story.html?id=0875b435-9158-4fe5-a2ef-ef2a22a64167>; Internet; accessed 3 February 2012.

force may result in unintended and strategic consequences; however, these incidents will continue to repeat themselves so long as lethal force remains the only means to deal with escalation of force and force protection issues.

- b. Another incident occurred when a motorcycle failed to heed warning procedures and charged a dismounted section in an attempt to draw fire. One teenager was killed and the other teenager was wounded. The difference between this case and the previous one is that this was confirmed to be a well-known Taliban/Insurgent tactic. They would surge towards the soldiers in order to test the security perimeter. However, they were unfazed by the risks because they knew that in the event of serious injury or death that this would typically result in a sensational media story that would further undermine Canadian support for the mission.¹⁰⁴ The Taliban were able to leverage our ROE and escalation of force process to their benefit.
- c. Unfortunately, these types of incidents repeated themselves several times during Op ATHENA. Canadian soldiers faced similar incidents when Afghans breached their security perimeter either by accident, negligence or deliberate attempts to challenge their resolve and force posture. In some cases, Afghans were engaged with lethal fire by soldiers who believed that they were threatened while, in actual fact, Afghans are generally poor drivers.
- d. The US and UK militaries have also experienced tragic incidents at check points in Iraq and Afghanistan that could have been preventable. In a concerted effort to

¹⁰⁴ This is the author's personal experience having been employed as the G3 Task Force Kandahar from February to November 2009. My task was to coordinate the investigation, as well as, to the conduct media response.

minimize civilian casualties and deaths that resulted from convoy operations, traffic control and checkpoint operations the US Army fielded Stryker armoured vehicles mounted with a suite of non-lethal technologies. The Full Spectrum Effects Platform (FSEP) vehicles were “equipped with floodlights, laser dazzlers, and a loudspeaker system in order to provide an alternative to lethal weapons in an escalation of force scenario”.¹⁰⁵ The intent of the vehicle was to “enable soldiers to accomplish their mission without resorting to deadly force.”¹⁰⁶ The CF should consider this requirement in their future vehicle programs.

- e. Another example worthy of mention actually occurred in the continental US, yet highlights the requirement for an alternative to lethal force. Specifically, an American citizen was shot for failing to heed the warnings when approaching a US naval base. The incident occurred 14 September 2001 - three days following the terrorist attacks on the Twin Towers and the Pentagon. In context, the sentries stated that they believed their country to be under attack again and shot the driver five times. As a result of this incident, the US Secretary of Defence directed that the national base defence and security posture would adopt NLWs in order to eliminate the potential to repeat these mistakes.¹⁰⁷
- f. This incident highlights the need for the employment of NLWs as part of national

¹⁰⁵ Nathan Hodge. “US Army Deploys ‘Non-Lethal’ Stryker in Iraq” *IHS Jane’s: Defense and Security Intelligence and Analysis*. Journal on-line; available from <http://www.janes.com/products/janes/defence-security-report.aspx?id=1065928382>; Internet; accessed 13 January 2012.

¹⁰⁶ *Ibid.*

¹⁰⁷ Edmundson. 26-27.

security and homeland defence tasks. Moreover, the legal and ethical problems that arise from this incident are similar for both the US and Canada. Both militaries employ NLWs while deployed abroad, but typically not for domestic operations. One of the main reasons for employing NLWs is to reinforce and support the ‘hearts and minds’ campaign while deployed. Therefore, it is recognized that the value of protecting an indigenous population has a strategic and tactical impact towards achieving mission success; however, there should also be consideration given to the value of our own citizens’ lives.

7. **G8/G20 Riots, Toronto, 25-26 June 2010.** The 36th G8/G20 Summit was held in Huntsville and Toronto, Ontario. The overall security task was the responsibility of the RCMP; however, there were additional security forces provided by local law enforcement agencies. The CF supported this mission by providing troop presence and unique military capabilities, as well as, the provision of general support. This case study considers the employment of NLWs by the police, as well as, justification as to why the CF does not want soldiers deployed in crowd control tasks.
- a. The Toronto Police Services were authorized by the Supreme Court of Ontario, Justice Brown to employ the Long Range Acoustic Device (LRAD) respecting certain caveats. They were authorized to employ the LRAD as a NLW capability. Specifically, the LRAD was authorized to be employed as a loud hailer, but could not be used to cause pain above the threshold for the human ear.¹⁰⁸ The justice recognized the importance of communicating with the crowd as a primary means

¹⁰⁸ Ontario Supreme Court of Canada. *Canadian Civil Liberties Association v. Toronto Police Service*, 2010 ONSC 3525 (CanLII), #CV-10-404640, 25 June 2010, <http://canlii.ca/t/2bbf4>; Internet; accessed 4 February 2012.

of providing safety and security for the people of Toronto, the protestors and the police.¹⁰⁹

- b. There were absolutely no soldiers deployed in downtown Toronto as part of the G8/G20 Summit; however, the CF conducted joint patrols with the law enforcement agencies only in Huntsville. The soldiers were restricted from using anything but non-deadly force with the exception of the inherent right of extended self-defence. As well, the soldiers were not authorized to act as a peace officer or make arrests. Finally, the soldiers did not have any NLWs to provide enhanced stand-off range in the event of a civil disturbance.
- c. Overall, the CF considers the G8/G20 Summit as a success, although the majority of Canadians remember only the riots that occurred in Toronto. The CF retained popular support because they avoided placing soldiers in the urban environment and the scrutiny of the media. As well, this decision has avoided the post-G8 legal battles and court actions against the Crown, the RCMP and the Toronto Police Services who are being sued for allegedly using excessive force and breaching the civil liberties of Canadians.
- d. This scenario highlights the key issue with respect to the employment of NLWs as part of domestic operations within Canada. Strategically, the CF have reinforced that they do not want soldiers to be the 'face of the operation', which also serves as the justification for the decision to overlook the requirement for NLWs. The CF recognizes the risks of domestic operations and the potential that public opinion

¹⁰⁹ CTV News. "*Judge Allows Police Use of Sound Cannons with Limits.*" http://toronto.ctv.ca/servlet/an/local/CTVNews/20100625/sound_cannon_ruling_100625/20100625/; Internet; accessed 4 February 2012.

and popular support for the CF may be jeopardized by tactical failure. Moreover, this argument views the employment of NLWs as problematic largely because the Canadian public has a negative perception of '*lasers, tasers and spray*' as a result of several high-profile police incidents. Based on this rationale, it remains unlikely that NLWs will be employed in support of domestic operations. This assessment is based on the fact that despite all of these case studies where soldiers could have benefited from having a NLW capability, the CF has not properly addressed this deficiency. Therefore, it is assessed that the strategic risks to the CF's credibility overshadow the operational imperative.

These case studies highlight the operational requirement for NLWs, as well as, an alternative between the use of non-deadly force and deadly force. A brief synopsis of the key findings from these operational scenarios follows below:

- (1) Domestic operations are contentious and risky. They potentially place the CF in situations that jeopardize their centre of gravity, specifically, public support. As such, the CF must carefully consider the operations and tasks to which they are committed. These scenarios suggest that one of the critical concerns with domestic operations is the fact that failure at home could jeopardize national unity. The employment of NLWs would provide a pragmatic alternative to lethal force should the soldiers need them.
- (2) These case studies identify occasions when the CF have been deployed to quell hostile crowds without proper equipment, which endangered the

health and safety of our soldiers. As well, there were occasions where options of non-deadly force and the use of deadly force prove inadequate. More specifically, the soldiers did not have an alternative level of force to assist with de-escalating the situation nor were they able to remove themselves from the area. The case studies suggest that there has been an operational requirement for NLWs that has been ignored and remains extant.

- (3) The operational requirement for NLWs exists for domestic and deployed operations. There is a need to provide effective force protection measures and an alternative to lethal force that minimizes casualties and collateral damage.

These operational scenarios highlight the need for an intermediate level of force for both deployed and domestic operations. The US military institutionalized the employment of NLWs as a complement to full spectrum of operations as a result of operations in Somalia; however, the same cannot be said of the CF. Canadian soldiers have always acted professionally and with great restraint despite extremely stressful conditions and, in some cases, they have performed without the proper equipment or training. This can-do attitude has garnered much respect and accolades, but it also highlights the potential for errors.

The counter-argument is that the CF's position may have been influenced based on several of the scenarios presented above, such as, the politically charged and divisive nature of the FLQ/October Crisis and the stand-off at Oka, as well as, the G8/G20 Summit in Toronto. However, these cases reinforce the need to protect the CF's centre of

gravity by shielding the CF from any task that may jeopardize popular support. As such, it was assessed that the strategic risks were too great to have the CF employed in a domestic crowd control operations. Furthermore, there is an enormous cost deterrence impeding the CF from fully engaging itself in a NLW procurement program, while, at the same time, remaining committed and focussed on its core missions. Having considered a series of modern historical examples, it was shown that the CF continues to overlook the merits of utilizing NLWs. Hubris is a dangerous alternative to creating sound capability development and addressing force protection issues. Regardless, the fact remains that these case studies demonstrate that our soldiers have been deployed on numerous operations, both at home and abroad, where mission success could have been assisted through the deployment of NLWs.

REVIEW OF THE CF's NLWs PROGRAM

The goal of this section is to examine the CF's NLWs program. This includes a discussion on the procurement of the Non-Lethal Laser Dazzler and the Long-Range Acoustic Device by the Canadian Army and Royal Canadian Navy, respectively. This section will also provide a general overview of Defence Research and Development Canada's recent efforts in support of the services, as well as, expressing the significance of their contributions in advancing the theoretical field of NLWs.

The discussion of the CF's NLWs program will be explained only after having considered the programs of our allies, which serve as a yardstick for an effective NLWs program. The CF's approach to the development and acquisition of NLWs is dissimilar to our like-minded allies and would indicate that our efforts pale in comparison. In particular, the US, UK and Australian militaries have institutional level support for their

NLWs programs, which have gained formal recognition in their government's directives and defence white papers. Moreover, all three nations have implemented a joint acquisition approach that provides guidance for their respective programs and, thus, they can address common goals for the development, employment and procurement processes.

The US, UK and Australia NLWs programs benefit from the institutional support of their government and senior military leadership which proves essential in creating an effective equipment program. Scarce resources and limited budgets create friction among projects such that programs without a champion or a common vision tend to be overlooked and whither.

The UK's NLW program is effectively built upon its history of conducting "crowd control" operations in Northern Ireland.¹¹⁰ As a result, the military has extensive operational experience in conducting CCO; more importantly, their military continues to maintain this skill-set by conducting annual refresher training at the unit level and by maintaining modern and large-scale pool of equipment, if needed. The important take away is that the UK's NLW program is very mature¹¹¹ and that it benefits from institutional support based upon recent operational experiences conducting domestic and international operations.

Australia's nascent NLW program was formally created in 2009 as part of modernizing their defence capability plan that established a Joint Non-Lethal Capability, called Joint Project 3011, (JNLC, JP 3011). Overall, the Australians have implemented a modernization project that seeks to provide a suite of non-lethal capabilities across all

¹¹⁰ The term "crowd control" is used in this context because this refers to the UK doctrine of crowd control and not the Canadian term for crowd confrontation operations.

¹¹¹ Leon Goodman and Donna Wood. *Toward the Development of a Canadian Less Lethal Weapon Approval Process: A Study of Contemporary Process Models*. DRDC-CSS TM-2011-017, Defence R&D Canada – CSS, October 2011, 7.

three services. The defence capability plan states that the aim of having a “robust JNLC will expand the spectrum of force protection options available to commanders and soldiers to permit a graduated response to a threat especially where an instantaneous lethal response is not appropriate.”¹¹² Another important element of the ADF’s approach is that they will work closely with the US and UK allies, and will focus on commercial-off-the-shelf technologies that are considered immediately available. It is envisaged that they will use NLWs for crowd confrontation tasks, as well as, in point security tasks such as check points, fixed facilities and naval installations. The Australian Defence Force (ADF) recognizes the need “to provide force protection without the threat to local citizens of immediate lethal consequences and bridge the gap between ‘shout and shoot’, which has driven much of the NLW R&D in recent years.”¹¹³ Moreover, it was reported that the ADF consider that “no democracy can afford for long the debilitating loss of credibility and public support resulting from the death or injury of non-combatants, or civilian demonstrators.”¹¹⁴

The US military has the most mature NLWs program amongst all militaries. Their program is a government priority and they have the capacity to focus their efforts on operational requirements for all branches of the US Department of Defence, as well as, extensive research and development projects. Overall, the US NLW program benefits

¹¹² Australian Government. Department of Defence. Defence Capability Plan 2009 (December 2010 Update) Public Version. http://www.defence.gov.au/dmo/id/dcp/html_dec10/jp/JP3011.html Internet; accessed: 31 January 2012.

¹¹³ Gregor Ferguson, “Defence Business: JP 3011 – Graduated Response – Non-Lethal Weapons Emerge from the Shadows” *Australian Defence Magazine*, 1 February 2009, Journal on-line; available from <http://www.australiandefence.com.au/2252AF20-1DAF-11DE-919D0050568C22C9>; Internet; accessed: 31 January 2012, 2.

¹¹⁴ *Ibid.*, 6.

from wide-spread support across the government, the military and academia. The following two quotes provide amplifying support to the importance and significance of their NLW program, according to the government and the military, respectively.

The committee reiterates its belief that the non-lethal weapons can and should play an increasingly important role in meeting the evolving requirements of the U.S. military strategy.¹¹⁵

Report of the Committee on Armed Services

U.S. House of Representatives

National Defense Authorization Act for Fiscal Year 2012

and,

The Department of Defense Non-Lethal Weapon Program will continue to promote and identify game-changing scientific advancements and further refine existing technologies for development and integration within the force's non-lethal inventory. And while fully scalable weapons may be years from development, we will strive to incorporate existing non-lethal munitions within fielded weapons and platforms to provide commanders with scalable effects systems in the near term.¹¹⁶

Lieutenant-General Richard T. Tryon

Deputy Commandant of the Marine Corps for Plans

Chairman of the Joint Non-Lethal Weapon Program

As previously stated, operations in Somalia served as the genesis for the US NLWs program. As such, they have benefited from many years to gain a level of institutional maturity for their program. There has been an over-arching policy directive since the mid-1990s that serves as the foundation of their program and from which follow-on strategic guidance and tactical employment manuals have been promulgated. The US Department of Defense *Directive 3000.3 Policy for Non-Lethal Weapons* stipulates that the Commandant of the USMC serves as the Executive Assistant for the

¹¹⁵ U.S. Department of Defence, *Non-Lethal Weapons Program Annual Report 2012 – Non-Lethal Weapons for Complex Environments*. <http://jnlwp.defense.gov/pdf/annualreport/2010%20Annual%20Report%20Final%20PDF.pdf>; Internet; accessed 3 February 2012. 2.

¹¹⁶ *Ibid.*, 7.

Joint Non-Lethal Weapons Directorate. This policy is important because it provides guidance on the procurement and development of NLWs, as well, mandates that the US Department of Defence's NLW program encompasses all of the branches of the armed services and, thus, is completely joint and integrated.

In contrast to our allies, the main criticism of the CF's NLW program would be that ours does not establish a joint approach that unifies the services individual programs. Moreover, there are few policy directives that shape our research and procurement efforts. Overall, the evolution of the CF's NLW program has not matured sufficiently to account for the complexities of the contemporary operating environment. The CF's NLW program lacks a comprehensive approach across the services. As a result, the CF's procurement process has been platform specific and independent of the other services. Therefore, it is suggested that the CF's NLW capabilities are built upon a series of individual projects and not a program, per se.

Another factor to consider when comparing our program with that of our allies, and primarily the US program, is that the CF's NLW program pales due to sheer scope and scale, as well as, budgetary considerations. Nevertheless, the CF should remain abreast of our allies programs especially in the event that an operational requirement arises. To date, the CF's program has focussed on commercial off the shelf non-lethal capabilities vice long-term development technologies.

The number of staff responsible for the procurement and R&D of NLWs is limited to a few dedicated individuals. Therefore, it should be anticipated that the CF's NLW program has been marginalized. The RCAF, unlike the USAF, does not have a mandate for airfield defence and perimeter security tasks, therefore, they do not have a

requirement NLWs at this time. As such, the paper will only consider an examination of the procurement efforts of the RCN and the Army, respectively.

The RCN has considered NLWs as an operational requirement to enhance its need to communicate with and alert small vessels operating within a ship's security and defensive envelope. Namely, the RCN has conducted a lengthy and extensive research and development phase that tested the suitability of the Long Range Acoustic Device (LRAD) to complement its close protection requirements.¹¹⁷ This system is effectively a loud hailer that can also provide sharp acoustic pulses to alert and deter persons within a specified range. The system that was evaluated by the RCN is similar to that used by the Toronto Police Services during the G8/G20 Summit in 2010.

The Canadian Forces Maritime Warfare Centre (CFMWC) determined that the LRAD, when combined with a searchlight, would provide an effective auditory and visual signal that would make it a suitable tool to extend the ship's defensive envelope. In December 2008, it was recommended that each high readiness ship be equipped with the LRAD immediately because the system provided "unambiguous ability to communicate to and determine the intentions of vessels and small craft via alerting and warning off outside the 'Keep Out Zone' which is operationally critical."¹¹⁸ The report determined that the LRAD was effective for warning but was "not effective as a NLW in a maritime force protection application."¹¹⁹

¹¹⁷ The USN has 40 different NLWs and non-lethal technologies, according to *FM 3-22-40, Tactical Employment of Non-Lethal Weapons*, whereas the LRAD is the RCN's only NLW.

¹¹⁸ Executive Summary – Long Range Acoustic Device Buy and Try Evaluation, CFMWC: 3333-1 (C4T&E) dated 18 December 2008, Annex A, A-3/3.

¹¹⁹ *Ibid.*, A-1/3.

Additional tests and a subsequent report further amplified the operational and legal restrictions associated with the employment of the LRAD. In September 2009, it was determined that the LRAD would be recommended solely for employment as a communications and a warning device. It was prohibited from being used as a NLW, that is to say that it was forbidden to employ the acoustic pulse function. This decision was based on two key factors. First, it was determined that the LRAD was “incapable of producing the desired acoustic weapons effect at meaningful distances within the maritime operating environment.”¹²⁰ More importantly, the RCN restricted the LRAD to be used solely in a communications role, and therefore, not legally employed as a weapon.

The Canadian Army has more of an operational imperative than the other services to address the operational requirement for fielding NLWs. Specifically, the Army identified an operational requirement for NLWs based on operations in Afghanistan. They procured the Non-Lethal Laser Dazzler (NLLD) to address the requirement to assist soldiers operating in close proximity with Afghan locals and insurgents, which were discussed as part of the historical case studies. A review of the NLLD project highlights the challenges and lessons learned based on a relatively mature technology. The system consists of two variants; one is a rifle mounted attachment and the other is a hand-held laser similar to a flashlight. Both variants provide a bright light that is considered an eye-safe visual warning so that Afghans could avoid the soldiers’ defensive perimeter.¹²¹

¹²⁰ Report Long Range Acoustic Device Non-Lethal Weapon Test, CFMWC: 3250-1(AWB T&E) dated 15 September 2009, 1/2.

¹²¹ Laura Eggertson, Military Claims Laser Dazzlers have Negligible Risk” *Canadian Medical Association Journal (CMAJ)*, Vol 180 Iss 11, 26 May 2009, Journal on-line; available from <http://www.cmaj.ca/content/180/11/1099.full>; Internet; accessed 8 February 2012.

The NLLD was required to address a serious force protection capability deficiency and was fast-tracked in order to address a wartime operational imperative for our soldiers in Afghanistan. Specifically, it was required to provide a non-lethal means to hail, warn, deter and dissuade vehicles or person from encroaching within the defensive perimeter or security zones established by Canadian soldiers. The threat of enemy action and suicide bombers was real; and Canadian soldiers were dying at an ‘alarming rate’ once the mission shifted from Kabul to Kandahar Province. Also, affected by the presence and influx of Canadian soldiers were the innocent Afghans who were unaccustomed to the soldiers’ defensive posture. Overall, the numbers of escalation of force violations in 2007 indicated that approximately 45% of them resulted in civilian deaths and casualties.¹²² As a result, the CF and, in particular, the Army required an effective deterrent to approaching vehicles and pedestrians that provided an alternative to the use of lethal force.¹²³

Overall, this was deemed a low-risk project because the technology had been in use since the mid-1990s; however, the project still suffered several delays, which can be attributable to internal and external challenges. The project was delayed as a result of the Federal Elections during which time no project received government approval, and the other delays were the result of working with the myriad of stakeholders that became involved in this project specifically because it was a new NLW capability. As a lesson learned, it was identified that stakeholders need to be identified and engaged as early as

¹²² Major Stephane Dufour, *Escalation of Force: Capability Gap Analysis*. Presentation to the Senior Review Board. Ottawa, ON, 24 September 2008, Slide 3. It is important to note that according to the presentation notes, that actual numbers remain sensitive in nature. As such, the essay has not provided the exact details.

¹²³ *Ibid.*, Slide 9.

possible. This may be stating the obvious, but this project was delayed because several stakeholders were overlooked. The project was fast-tracked because of the Chief of Defence Staff's interest, yet it still took approximately 3 years before the soldiers had the capability in the field due to bureaucracy and policy delays.¹²⁴

The approval process followed by the NLLD project is depicted in the figure below and represents a typical flow for most CF capital projects. It clearly indicates the 'holy trinity' of gaining the endorsement of the medical, legal and safety/policy as part of the procurement process of a new weapon system. Specifically, new weapons systems require the Minister of National Defence's authorization prior to being issued to soldiers. In addition to the three main advisors, the project solicited support from the CF Laser Authority in order to determine that the NLLD was safe and lawful for operational employment.

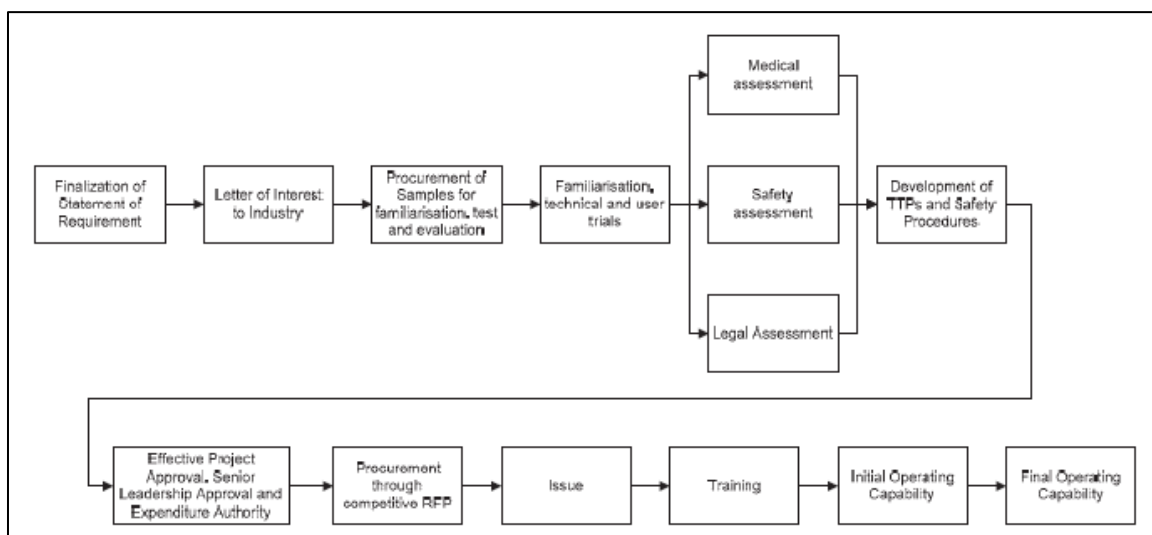


Figure 2 - Non-Lethal Laser Dazzler Approval Process

Source: Goodman and Wood, *Development of a Canadian Less Lethal Weapon Approval Process*, 27.

¹²⁴ Major Stephane Dufour, *Non-Lethal Laser Dazzler (NLLD) – Project Close-Out Presentation to the Senior Review Board*. Ottawa, ON, 16 March 2011, slide 14.

It is interesting to note that the tactics, techniques, and procedures were completed concurrent with the initial implementation stages in order to field the equipment as quickly as possible into theatre, which was a novel approach undertaken by the NLLD project team.¹²⁵ The soldiers conducted the work-up training prior to deploying to Afghanistan, which proved to be an excellent method of maintaining positive control of the training progress rather than attempting to complete this training in theatre. In the interim, Commander Task Force Kandahar (TFK) mandated that his in-theatre staff proactively launch an extensive public awareness campaign in order to educate the Afghan/Kandahar population that the Canadians would be fielding an eye-safe laser and set the expectation that they would behave in an appropriate manner when interacting with Canadian soldiers.

There are two anecdotes worth reporting that illustrate the need for a concerted strategic communications and public awareness campaign prior to fielding NLWs. First, the US and UK troops had been using NLLDs when travelling between Helmand Province and Kandahar Airfield, unbeknownst to TFK HQ, which suggests that the Kandahar population may have been previously exposed to the NLLD in a limited fashion. The second story occurred almost immediately upon fielding the NLLDs and, despite the best intention, not everyone was aware of the expected procedures when dealing with a Canadian checkpoint equipped with NLWs. The Afghan driver continued to drive towards the soldiers ignoring the laser dazzler; however, when questioned by the angry soldiers it was reported that he was advancing because the laser was a green-

¹²⁵ Department of National Defence. Project Completion Report (PCR) Non-Lethal Laser Dazzler (00001234) RDIMS#2449807, Ottawa, ON, 25 May 2011, 7-9.

coloured light and thought he was being waved forward as per standard traffic light colours.¹²⁶

There was interest for this type of capability from across the other services; however, unfortunately, it was too late for the Army's project team to account for the additional requirements and secure the necessary approvals in a timely fashion within the original scope of this project. This highlights either a failure in the current procurement process which is not deemed to be the case or, alternatively, that there is a requirement for a joint project office similar to our allies' programs.

Overall, the project was reported to be a huge success and was an essential element in reducing the number of escalation of force violations.¹²⁷ Unfortunately, the Army Lessons Learned Centre does not have any specific data or after-action reviews related to the fielding and employment of the NLLD. That being said, this type of information is reported directly to Canadian Forces Expeditionary Command as part of the task force's Daily Situation Report; however, the reports remain at a security classification beyond the level of discussion for this paper.

The one criticism regarding the employment of NLLD was that the soldiers were required to complete the escalation of force report as if they had actually fired their weapons, which may create an operational aversion to employing this system as an alternative to lethal force. The US NLW doctrine has also noted that soldiers should not

¹²⁶ It should be noted that the NATO standard for non-lethal lasers was selected to be green instead of red-coloured lasers so that they are not confused with targeting lasers.

¹²⁷ Dufour, *Non-Lethal Laser Dazzler (NLLD) – Project Close-Out Presentation to the Senior Review Board*, slide 9. There were no specific mention of empirical data to support this statement; however, these figures are typically classified.

be restrained from employing their NLWs by additional administrative policies. As such, the CF should avoid this approach in future operations.

The CF's combat role has ceased in Kandahar Province and the soldiers that remain in Afghanistan do not have an active patrolling task outside the wire. Therefore, the NLLDs have been returned to Canada and remain restricted for future international operations. This NLW system was authorized in accordance with an operational waiver by Director Ammunition and Explosives Management and Engineering (DAEME); however, now that the stated mission and operational requirement has ceased this capability is no longer authorized for use in operations or training.

The Army has sponsored other NLW projects; however, in some cases they have been less successful than the NLLD project because the operational imperative was less clearly defined. Another example would be the requirement for non-lethal ammunition, which has been included within the scope of the Special Weapons and Ammunition project. This project also includes ammunition for the new combat shotgun, the suite of weapons for the naval boarding parties, as well as, new hand grenades. Currently, this project is at the identification stage and designed to field capability between fiscal years 2015-2020. It can be anticipated that this project like most other capital projects will be delayed. Moreover, the complexities of the various weapon systems within this umbrella project may cause unintentional delays. As such, it is possible that the requirement for non-lethal ammunition will become "lost" amongst higher priority munitions and weapon systems.

The Army will focus on NLW capabilities that are not contentious and suites of equipment that do not necessitate additional training. Overall, the Army has recognized

that NLW projects cause problems for strategic decision-makers and, therefore, it has decided that non-lethal capabilities and ammunition will be limited to in-service equipment, such as, the M203 40mm grenade launcher and the 12 gauge shotgun.¹²⁸ As well, the Army has stated that it will focus their procurement and development efforts on interoperable weapons systems and thus avoid creating an additional training bill or increasing the fleets of equipment currently in-service. This approach was confirmed at the Army Research Board, where Chief of Staff Land Strategy reinforced that:

NLWs have their place and that the future will call for more systems, perhaps autonomous ones, but that in emergencies it is likely the Army will buy off-the-shelf. It was appreciated that the research and development community will continue to test non-lethal systems, and, for the next bound, study ways to defend from them. The R&D investment in the area of NLWs is presently well-balanced until capability needs are further developed.¹²⁹

This quote serves as a segue to consider DRDC's involvement in the CF's NLW program. As such, the paper will examine the research and development community's efforts in support of furthering the CF's NLWs capability. Since 2004, DRDC has been instrumental in supporting the Army's and Navy's NLW projects, as well as, developing strategic partnerships with key allies, NATO working groups, and academia. Effectively, DRDC has assumed the role as 'keeper of the keys' for the CF's NLWs program, especially as it relates to maintaining an understanding of technologies beyond the near-term requirement.

¹²⁸ A good example is that the Army decided not to select *Simunition*TM, (paint-ball bullets) as a non-lethal capability because it required a different bolt and upper receiver for the service rifle. However, this system is an effective training tool but it has no operational role.

¹²⁹ Record of Decisions – Army Research Board – 29 June 2011, 3185-1(COS Land Strategy) dated 30 June 2011, 7/12.

One of DRDC's seminal reports on NLWs, "*Non-Lethal Weapons: Opportunities for R&D*", provided a scientific overview of all non-lethal technologies; discussed the ethical and legal challenges associated with NLWs; established the evolving military requirement for NLWs; and detailed the research and development challenges of NLWs.¹³⁰ They recommended that the CF continue to leverage DRDC's depth of knowledge of the field of NLWs and that they conduct a forward-looking study that considered the technological advances of NLWs corresponding with the emerging defence and security threats of terrorism and asymmetric warfare. As well, the study provided an overview of the CF's policy, doctrine and operational requirements.

The report made several key observations and recommendations that are worth noting. Specifically,

- (1) The evolution of the operational environment since the end of the Cold War has made NLWs a new and pressing military requirement;
- (2) Developments in many technological areas have advanced to a point where the potential for many NLW applications can now be seen;
- (3) International studies have indicated that the major technological challenges facing NLW R&D are: the scarcity of well-documented target response data to the various NLW technologies; the lack of modelling and simulation tools to assess the operational effectiveness; and NLW counter-measures;

¹³⁰ Gilles Berube, et al. *Non-Lethal Weapons: Opportunities for R&D*. Technical Memorandum DRDC-TM-2004-006, Defence R&D Canada – Centre for Operational Research and Analysis, December 2004.

- (4) DRDC expertise in lethal weapon, protective measures and human performance R&D is applicable to many areas of the NLW technology taxonomy; and
- (5) Legal and ethical constraints must be respected in NLW R&D.¹³¹

It is important to note that DRDC has been very actively engaged in furthering the research and development of NLWs for the CF and NATO. Highlights of their efforts include the following examples. First, they have completed a study on crowd behaviour and now have the ability to model the reactions of crowds. The Close Action Environment (CAEn) software has been a very useful simulation tool and has been used in subsequent studies on NLWs and control scenarios. DRDC has also conducted a detailed review of the literature associated with NLWs that identified current and future technologies that could be of interest to the CF.¹³²

As well, DRDC has proposed the methods and principles necessary for creating a uniquely Canadian approval process for NLWs.¹³³ It was determined that this would be a useful process given the recent lessons learned from the procurement of the NLLD. This study compared the US and UK approval processes and, ultimately, made recommendations for a method that was reflective of our allies' process yet respects Canadian legislative and administrative regulations. The study recommended that the Canadian approval process for NLWs should be built upon an approach that was:

¹³¹ *Ibid.*, 11.

¹³² Frini et al., *Crowd Confrontation and Non-Lethal Weapons: A Literature Review and Conceptual Model*. Technical Memorandum DRDC-TM-2007-488, Defence R&D Canada – Valcartier, 1 March 2008.

¹³³ Leon Goodman and Donna Wood. *Toward the Development of a Canadian Less Lethal Weapon Approval Process: A Study of Contemporary Process Models*. DRDC-CSS TM-2011-017, Defence R&D Canada – CSS, October 2011

transparent; independent; flexible; inclusive; and, operationally relevant. Overall, this report should become the CF's approval process for future procurement for NLWs, but this may require additional study and debate, which is beyond the scope of this paper.

Another excellent example of DRDC's commitment towards developing the CF's NLW program was a research study that examined whether there was a capability gap in the CF's arsenal when it comes to NLWs.¹³⁴ Dr Dobias, DRDC-CORA, provided a detailed list of the CF's capability gaps having conducted a comparative analysis that considered the potential employment of NLWs as part of the CF's anticipated operational missions, as well as, NATO's operational planning scenarios. This report demonstrated that a genuine capability gap exists between the requirement for non-lethal capabilities and the CF's anticipated missions. The report used CFD's capability-based planning model, known as the Strategic Capability Roadmap / Force Capability Plan for defining the CF's missions and scenarios. The capability-based planning models are typically used to inform force development and procurement efforts. This work was recently released as part of the NATO Systems Analysis and Studies (SAS) Panel 078 that was conducted in October 2011. The purpose of SAS 078 "Non-Lethal Weapons Capability-Based Analysis" was:

... to determine alliance and national NLW requirements, assess current and projected capabilities versus requirements to identify capability gaps, identify candidate solutions (non-materiel and materiel), perform associated work on experimentation, and offer study conclusions and recommendations.¹³⁵

¹³⁴ Edmundson, 69.

¹³⁵ Dr. Peter Dobias, *Non-Lethal Weapons Capability Based Analysis*. Technical Memorandum TM 2011-173, Defence R&D Canada—Centre for Operational Research and Analysis (CORA), October 2011. 1.

DRDC's efforts have also proved instrumental in the Army's decision to focus its procurement efforts on NLWs that are interoperable with the in-service fleet of weapons. This was largely influenced by information derived from operational research studies. Specifically, there was a series of war-games that served as a critical review of the operational requirement for NLWs, as well as, the types and quantities of non-lethal systems that would be required. The *Nickel Abeyance* war-games consisted of six successive and increasingly complex scenarios that reviewed the mix of NLWs at the section, platoon and company level.¹³⁶ The operational scenarios consisted of a variety of counter-insurgency situations that modeled the actions and reactions of soldiers, combatants/insurgents and non-combatants. Overall, the results of the *Nickel Abeyance* studies have been used to validate the optimum number of non-lethal weapons systems that would complement the Army's capability to successfully carry out operations at the company level and below. It is recognized that DRDC's role has supported the Army as a primary focus and end-user of NLWs.

To date, the CF has demonstrated an approach that would lead one to believe that the organization, seemingly, remains unconvinced of the operational requirement for NLWs. Therefore, it can be presumed that without a significant reason to change the CF will maintain a status quo approach to the support and procurement of NLWs that will continue into the future. Clearly, there are limited funds and personnel available to address issues that fall outside of the main effort and the core business. As such, it might be that the effort by the services to address NLWs reflects an approach of "good enough"

¹³⁶ Dr Peter Dobias, Ms Zakia Bouayed and Major Steve Bassindale, *Non-Lethal Weapons Mix Study: Non-Lethal Weapons in Reactive Crowd Confrontation, Nickel Abeyance III*. Technical Memorandum DRDC-TM-2008-046, Defence R&D Canada – Centre for Operational Research and Analysis (CORA), 1 November 2008.

by providing a minor capability only when it is required. If that is the case, then, the decision to delay the establishment of a comprehensive NLW program raises a concern that needs to be considered. The chairman of an independent think-tank, Malcolm Wiener, stated that:

The development of military doctrine must of course go hand in hand with the development of weapons systems to produce satisfactory results. Military history teaches us that the time elapsing between the introduction of a weapon and its satisfactory incorporation in doctrine is typically 20 years... the pace of technological change today brooks no such delay. It is accordingly essential that the Department Of Defense establish policy, doctrine, and structure covering all aspects of non-lethal conflict.¹³⁷

It seems implausible that it would take such a lengthy period of time to introduce new and novel equipment, but, in fact, this is relatively accurate when considering that the US NLW program commenced in 1996. Therefore, there are impacts to maintaining the status quo with respect to NLWs that the CF must acknowledge. Considering that it may take as long as 20 years for NLWs to be institutionalized, it is imperative that DRDC maintain close links with strategic partners in order to support the CF when there is a future urgent operational requirement. As such, DRDC will be poised to recommend mature and proven technologies that mitigate lost time.

In summary, this section has provided an overview of the initiatives associated with NLWs in the CF. In contrast to our key allies, the CF's NLW program lacks strategic guidance and remains undecided as to the strategic and tactical merits of an effective NLWs program. A review of the CF's NLW program suggests that success to date has been based upon the independent efforts of the services that have delivered

¹³⁷ Malcolm Wiener, *Non-Lethal Technologies: Military Options and Implications, Report of an Independent Task Force*, 1995, 15. Quoted from Major Andre Leger's thesis "*The Legal and Ethical Considerations for Canada in Using Non-Lethal Weapons in an Operational Environment*" Toronto: Canadian Forces College, Command and Staff Course Masters of Defence Studies, 24 April 2006, 44-45.

several niche projects. A brief discussion on the RCN's LRAD project and the Army's NLLD highlight the operational imperatives for NLWs and the unique nature of the security threats that each service must consider, as well as, the challenges of fielding NLWs. It was also noted that DRDC performs a very useful service for the CF and continues to maintain an active interest in the research and development of NLWs.

RECOMMENDATIONS

This paper has ascertained that there are valid strategic and operational benefits of employing NLWs as a complement to lethal weapons. However, the paper has also noted that the CF has been slow to endorse NLWs based on the number of case studies that demonstrate that there was an operational imperative for them. As well, there have been bureaucratic and legal obstacles that have delayed the fielding of NLWs for deployed operations. More importantly, it was suggested that the CF is unlikely to employ NLWs for domestic operations. Therefore, it would appear that the CF's approach will continue to overlook the requirement for NLWs and that the status quo for equipment projects will remain ad hoc.

Based on these statements, the following recommendations are proposed:

1. One of the key recommendations is the need to appoint a champion to provide oversight of the CF's NLW program. It is recommended that the CF adopt a procurement strategy that embraces the need for a common and joint approach to the development, funding and procurement of NLWs. The benefit of this approach would enable the CF to embrace a synergistic approach that maximizes the limited planning staff, R&D resources and funds. This was

previously recommended to be a joint procurement directorate¹³⁸; however, it may be more realistic that a common strategy be promulgated through integrated planning staffs from each of the respective environments chaired by Chief of Force Development (CFD).

2. Soldiers will deploy on operations without a non-lethal capability that offers an interim level of force that provides an alternate between “shout and shoot”. This creates a situation whereby the options available will be limited to the commanders’ restraint and lethal force to counter threats. Nevertheless, the requirement to address the operational requirement for NLWs and provide soldiers with a pragmatic alternative to lethal force will remain extant. Given this, it is recommended that the CF embrace NLWs as an effective means of force protection that is complementary to the escalation of force process and that enables soldiers to react in a commensurate fashion to threats with non-deadly and deadly force.
3. CF legal staff should be prepared for the requirement to draft ROE in short notice in order to support the operational requirements of the soldiers. Previous experience has determined that this has been a lengthy process that was not supportive of the needs of deployed commanders and their soldiers. The alternative is to prepare standing ROE, but that has proven problematic for various reasons that are beyond the scope of this paper.
4. CF Public Affairs staff should be prepared to provide strategic messaging that addresses the use and employment of NLWs so that the civilian population is

¹³⁸ Edmundson. 60-62.

aware of the intent and effects of these weapons. More importantly, the messaging should address the fact that NLWs are not guaranteed to completely eliminate the potential for deaths; however, clearly the employment of NLWs provide soldiers the flexibility to respond with lethal or non-lethal force depending upon the situation.

5. It is recommended that DRDC maintain close links with the US JNLWD in order to leverage the benefits of their R&D. Specifically, the focus should be on those NLWs that are considered suitable for immediate employment and fielded to theatres of operations to address urgent operational requirements.
6. It is recommended that the CF continue to work alongside NATO and ABCA allies in order to maintain situational awareness of each nation's respective programs.¹³⁹ The focus here should be to leverage on-going research and development. The secondary benefit of this approach would enable the CF to understand and identify the progress of NLW programs based on the likelihood of becoming an in-service item within common procurement timelines, such as, near-term and mid-term horizons.
7. It is recommended that the CF consider a requirement in their future vehicle programs that includes a suite of NLWs similar to the US Army fielded Stryker armoured vehicles. As previously stated, the Full Spectrum Effects Platform (FSEP) vehicles were equipped with a suite of non-lethal technologies designed to minimize civilian casualties and deaths that result from convoy operations, traffic control and checkpoint operations. This

¹³⁹ In fact, ABCA relies upon an organization called The Technical Cooperation Program (TTCP), which is an international organization that collaborates in defence scientific and technical information exchange, as well as, shared research activities for the ABCA and five-eyes nations.

vehicle would provide force protection and also enable soldiers to accomplish their mission without resorting to deadly force.

8. It is recommended that the CF proactively adopt a review process that addresses the legal and ethical concerns as part of the future development and employment of NLWs. As well, the CF must continue to provide direction and support to the Canadian Army's procurement initiatives and the limited but dedicated efforts of the CF's defence R&D community.
9. Lastly, it is recommended that Canadian Joint Operations Command, the combination of Canadian Expeditionary Force Command and Canada Command, should consider the employment and legal requirements for NLWs for domestic and deployed operations. The divided headquarters structure allowed these unique operational level commands to adopt different perspectives as to the legal and operational requirements; however, now that there is a combined headquarters this issue may need to be reviewed.

CONCLUSION

“Non-lethal weapons do not save lives... people save lives.” All you need is the intent, the desire and the support of the government to pursue the means to the ends. Government and military must be aligned in the pursuit of this evolutionary technology that will gain more and more acceptance as the fight is dragged into the homes of innocents around the world. Government and military leadership must remain focused on the end-state of peace and security and that to be fully accepted by nations who we desire to support; we must remember that “hearts and minds” are not won over by putting bullets or shrapnel in them.¹⁴⁰

The overall intent of this paper was to demonstrate that there is an operational imperative for NLWs for both CF deployed and domestic operations. During the course of the research associated with this paper, it became apparent that the subject of NLWs can become emotional and is often misunderstood. There are many challenges and myths associated with the employment of NLWs that often cloud the issue. Other important considerations that affect the employment of NLWs are legal issues, which are more complicated when dealing with domestic operations. That being said, it was noted that the mandate for employing NLWs exists within the legal framework of the *National Defence Act*, as well as, *International Law*. It is understood that the CF deploys as a ‘force of last resort’ in civil disturbance; however, this should not limit our soldiers to only having weapons that deliver lethal force. Furthermore, the literature has shown that NLWs have an application across the full spectrum of operations.

Without revisiting the conclusions of each section, it bears mentioning several observations. The discourse surrounding the challenges and concerns associated with the development and employment of NLWs has evolved beyond the theoretical debates. It was also noted that NLWs have become “operational” in the modern context because the

¹⁴⁰ *Ibid.*, 71-72.

technology has matured such that these systems have been deemed safe and lawful. The military, the research and development community and, more importantly, the NLWs industry have addressed many of these challenges head-on and have improved the technology of NLWs.

The central discussion of the paper focussed on Canadian specific issues associated with NLWs. Specifically, there was a need to determine whether the CF has a legal mandate to employ NLWs and whether there was a role for NLWs in the future security environment. It was noted that this was, in fact, the case on both accounts. The next discussion considered a historical analysis to examine whether there was a requirement for employing NLWs. The result was a comprehensive and extensive historical review of military operations conducted in Canada and abroad that listed numerous occasions when soldiers would have benefited from having NLWs. These case studies highlighted that the CF has had an operational imperative for NLWs for quite some time. Moreover, the sheer number of case studies demonstrated that the operational requirement exists for both international and domestic operations. It was argued that NLWs would provide a complement to lethal force and would also allow for the resolution of tactical problems within challenging political and strategic missions while minimizing civilian casualties and collateral damage. Despite overwhelming evidence that there is a need for an alternative to lethal force, the CF has conscientiously ignored this requirement. This is crucial because operational failure will jeopardize the achievement of political objectives, which become more complex when conducting domestic operations. This was demonstrated by the divisive and sensitive nature of the

FLQ and the Oka Crisis, which effectively placed the soldier at the centre Canada's national unity debates.

In closing, this paper provides a comprehensive and modern Canadian perspective on NLWs, which can be used to further the study of this capability. Overall, the CF's program lacks the institutional maturity of our key allies, namely the US, UK and Australia. In contrast to these nations, the CF's program lacks strategic guidance and would benefit from having the senior leadership endorse the requirement for NLWs. Otherwise, the CF's NLW program will continue to accept status quo, progress in an ad hoc manner, and thus, fail to provide soldiers with force protection measures that minimize civilian casualties. In conclusion, the CF has an operational requirement for NLWs across the full spectrum of operations while conducting domestic and international operations and, unfortunately, ignores the need for NLWs at its peril.

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