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## FUTURE SECURITY ENVIRONMENT AND EMPLOYMENT OF NON-LETHAL WEAPONS

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## **FUTURE SECURITY ENVIRONMENT AND EMPLOYMENT OF NON-LETHAL WEAPONS**

### **AIM**

1. The aim of this service paper is to evaluate employability of Non-Lethal Weapons (NLW) in the Canadian Armed Forces (CAF) within the changing security environment. The concepts in the paper will enhance the Canadian Forces (CF) NLW program and policy issues in furtherance of the national interest.

### **INTRODUCTION**

2. The changing global security environment increases the breadth of operations where security forces would be employed. A sense of conflicting dilemma always exists in application of a state's physical coercive power. With collateral damage, risk to safety of one's own troops and accomplishment of a legitimate mission at stake, there have been conflicting views on the application of the 'type and degree' of power exercised. The concept of NLW is hardly a recent creation. It has been in the inventories of various armies, police and territorial forces for decades. The CFs has used NLWs in past, to include laser dazzlers in Afghanistan.<sup>1</sup> Its naval boarding parties use pepper spray and Armament System and Procedures (ASP) batons.<sup>2</sup> However, the CF's NLW's use is rudimentary and its employment philosophy requires a rethink. Traditional NLW were plagued with defects and limitations (policy, health and legal issues). Technological advancements have provided a new NLW era, alluring a transformation in policy, doctrine and

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<sup>1</sup> Defence Research and Development Canada website. "*Laser-generated Visual Warning Technology systems*". Assessed on 01 Feb 2016. <http://www.forces.gc.ca/en/news/article.page?doc=laser-generated-visual-warning-technology-systems/hnps1uct>

<sup>2</sup> Captain Annie Morin. "*Operation Artemis: Boarding parties critical to maritime security*" Defence Research and Development Canada website dated 25 November 2013. Assessed on 01 Feb 2016. <http://www.navy-marine.forces.gc.ca/en/news-operations/news-view.page?doc=operation-artemis-boarding-parties-critical-to-maritime-security/hofhskw5>

employability in security forces. CFs has multifarious roles and cannot be left secluded from embracing the coinage of NLW.

3. The first part of this paper provides a brief overview of Non-Lethal Weapons. The second part will bring out the future security environment (FSE), roles of the CF and employment philosophy and requirements of NLWs in CF. The third part of the paper brings out the research and development programme, and challenges in undertaking NLW as a potent force multiplier. At the end, the paper will bring out a few recommendations focussing on how NLW can be espoused by the CAF.

## **NON-LETHAL WEAPONS**

4. “*Non-Lethal Weapon*” is a broad subject and includes a wide variety of weapons, system and technologies. The Canadian Forces define NLW as:

Those weapons and devices that are explicitly designed and primarily employed so as to incapacitate personnel, material, while minimising fatalities, permanent injury to personnel and undesired damage to property and the environment.<sup>3</sup>

The Canadian Army categorises NLW core capabilities into two major classes: anti-material and anti-personnel.<sup>4</sup> Effects in each capability can be produced by application of various technologies which are enumerated below. These technological categories are not all-inclusive and provide a summary of general categorisation.<sup>5</sup>

- a. Electromagnetic- lasers, optical munitions, microwaves, conductive materials.
- b. Chemical and pharmacological- CS and CN gas, and pepper spray etc.

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<sup>3</sup> Department of National Defence. B-GL-300-007 P-001, “*Firepower*” (Ottawa :Canada, 1999) Chapter 5, 101.

<sup>4</sup> *Ibid.*, 107.

<sup>5</sup> *Ibid.*, 102-106.

- c. Acoustic- including both audible and inaudible sound waves
- d. Kinetic energy- non-penetrating projectiles, containment systems delivered by projectile devices etc.
- e. Biological or bacteriological weapons.

5. There are varying interpretations of what constitutes NLW. For example the above definition does not include information operations (jamming, psychological operations. Etc.) or any other military capability which is not designed specifically for the purpose of minimising fatality or permanent injury etc.<sup>6</sup> Likewise, the United States (US) considers NLW as weapons which exhibit characteristics of incapacitating, reversibility, discriminating and non-destructive use of force.<sup>7</sup> However, NATO's definition of NLW does not explicitly exclude information and psychological aspects, as stated below:

Non-Lethal Weapons are weapons which are explicitly designed and developed to incapacitate or repel personnel, with a low probability of fatality or permanent injury, or to disable equipment, with minimal undesired damage or impact on the environment.<sup>8</sup>

The diversity in defining NLW affects the employment philosophy of these weapons. Seeing the vast scope of the NLW, for this paper, the discussion will be restricted to the Canadian Army's definition. It will not include information warfare or other means that are not explicitly mentioned in the Canadian Forces definition of NLW.

## **FUTURE SECURITY ENVIRONMENT AND THE CF**

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<sup>6</sup> *Ibid.*, 101.

<sup>7</sup> US Department of Defense. Directive 3000.3 policy for Non-Lethal Weapons. Dated 09 July 1996 and revised on November 2003. Assessed on 02 February 2016. <http://www.dtic.mil/whs/directives/corres/pdf/300003p.pdf>.

<sup>8</sup> NATO Press Statement on Non-Lethal Weapons, 13 October 1999, Issue No 40, September-October 1999. Assessed on 02 February 2016. <http://www.nato.int/docu/pr/1999/p991013e.htm>

6. Globalization and extensive media glare have blurred the Clausewitz “Total War” concept. The post-Cold War era has seen new complexities in the security environment. The world is now characterised by volatility and unpredictability. Global Terrorism, civil wars, and ethnic and border disputes have transformed the FSE into a more dynamic space. The security forces need to be more agile and flexible to adapt to such changing situations. Indeed, Canada is no exception, and also needs a modern, well trained and equipped military with the core capabilities and flexibility required to address the FSE.

7. The Canada’s First Defence Strategy defines three roles for Canadian Forces: defending Canada by delivering excellence at home; defending North America and maintain the status of strong and reliable partner in the defence of the continent; and lastly to contribute to international peace and security. The document also identifies six core missions for the Canadian Forces:<sup>9</sup>

- a. Conduct daily domestic and continental operations.
- b. Support major international events in Canada.
- c. Respond to terrorist attack.
- d. Support civil authority during crisis in Canada.
- e. Lead and or conduct a major operational for an extended period.
- f. And deploy forces in response to crisis elsewhere in the world for shorter period.

8. Canada’s foreign policy under the new Liberal Government re-instates Canada’s commitment to UN peace keeping operations.<sup>10</sup> Furthermore, this reinforces that the CAF will remain a key element in Canada’s commitment for peace keeping operations. The CF in order to

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<sup>9</sup> Department of National Defence, “*Canada First Defense Strategy*”. (Ottawa: DND Canada), <http://www.forces.gc.ca/en/about/canada-first-defence-strategy-summary.page>. Assessed on 03 February 2016.

<sup>10</sup> Prime Minister of Canada Official website “*Ministry of Defence Mandate Letter*”. Assessed on 04 Feb 2016. <http://pm.gc.ca/eng/minister-national-defence-mandate-letter>

address the full spectrum of roles and challenges of the FSE, need to be prepared and emerge as a flexible, integrated and combat ready force.

9. The FSE will be dominated by Irregular warfare (IW). Modern IW and counter insurgency operation theorist emphasise it as a struggle for support or winning the Hearts and Minds (WHAM) of the host nation population. The population being the Centre of Gravity for the insurgents and counter insurgents alike. The battles at Vietnam, Somalia, Bosnia, Iraq and Afghanistan are testament to this. Future battle spaces will induce security forces to fight in urban areas.<sup>11</sup> The new IW, where the enemy tend to merge with the locals, increases the probability of collateral damage if deadly force is applied. This would impinge one's own COG by losing local support. Hence, an urge for the employment of NLW is justified.

10. The new era of peace-keepers will be involved in peace-making, peace-building, peace-enforcement and peace-keeping. Each task exposing the peace-keepers to situations where the use of deadly force as an interim and immediate response will jeopardize the strategic and political objectives. Future peacekeeping operations will be more complex where majority of conflicts will occur in densely populated areas, increasing further chances of collateral damage. As evident from above discussion, FSE and peace keeping operations raises the requirement of employment of NLWs by our forces. It would enhance their force protection and provide them with flexibility in postponing the decision to use of deadly force, without compromising on the political and military objectives. These weapons will assist in de-escalation of a crisis and will act as an alternative to deadly means for friendly forces.

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<sup>11</sup> Robert M. McNab & Richard L. Scott (2009) "*Non-lethal weapons and the long tail of warfare, Small Wars & Insurgencies*", 20:1, Assessed on 01 Feb 2016. <http://dx.doi.org/10.1080/09592310802573566>., 143-145

11. The CF is mandated to participate in international and domestic operations as directed by Ministry of National Defence. The legal statutes that govern the CF's participation in such operations are defined in Rules of engagement (ROE), which are issued by competent military authorities in consideration of international laws, Canada's domestic laws, and host nation laws.<sup>12</sup> The ROE for international operations provide legal authority to use force while deployed and define permissive or restrictive arcs for use of force (lethal and non-lethal). The ROE comply with the Laws of Armed Conflict (LOAC) which prohibits the use of weapons and ammunition that cause superfluous injuries and unnecessary suffering.<sup>13</sup> Hence, raising a requirement, to consider including the lawful employment of NLW in ROE.

12. In domestic operations, the CF may be deployed to provide assistance to law enforcement agencies and aid to civil powers. The employment of the CF is considered as a 'force of last resort' and is normally employed when other means of national power are at risk of failing to protect national interest.<sup>14</sup> Typically, being employed as a 'force of last resort' may imply the use of deadly force, however, Queen's Regulation and Orders restricts the use of deadly force if less extreme measures can suffice. This does not specifically state the use of NLWs, but definitely validates their requirement.<sup>15</sup>

## **RESEARCH AND DEVELOPMENT (R&D) AND CHALLENGES.**

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<sup>12</sup> Department of National Defence. B-GL-300-007 P-001, "*Firepower*" (Ottawa:Canada, 1999) Chapter 5, 118.

<sup>13</sup> ICRC Official website. "*The Laws of Armed Conflict: Basic Knowledge*". Assessed on 01 February 2016. [https://www.icrc.org/eng/assets/files/other/law1\\_final.pdf](https://www.icrc.org/eng/assets/files/other/law1_final.pdf), 14.

<sup>14</sup> Department of National Defence. BGJ-005-000/FP-001, CFJP1.0- "*Canadian Military Doctrine*" (Ottawa: DND Canada, April 2009), 2-2.

<sup>15</sup> Department of National Defense. "*Queen's Regulation and Orders for the Canadian Forces, Volume I*". Assessed on 02 February 2016. <http://www.forces.gc.ca/en/about-policies-standards-queens-regulations-orders-vol-01/ch-23.page>, Chapter 23, Notes to Para 23.15.



13. Defence Research and Development Canada (DRDC) has taken a number of steps in the NLW field. It has conducted a technological watch on NLW and had commissioned a study “NLW- Opportunities for R&D” in 2004 to determine the opportunities available in the next decade. NATO and the Technological Cooperation Programme has conducted a number of studies on the effect of NLWs. DRDC had only participated in few of them.<sup>16</sup> Due to the limited literature available in open domain on DRDCs NLW program it would be naïve to conclude that the CF NLW program is in nascent stage. However, it would be safe to say that it lacks the rigour in comparison to its allies and primarily US, due to sheer scope and scale.<sup>17</sup> The restrictive view towards the R&D and employment of NLW is a cumulative effect budgetary of constraint, debates on ethical, legal and medical issues, and self-imposed restrictions on R&D. Few of the concerns and challenges are discussed as under:

- a. Performance of NLW. The reliability of these weapons to be completely non-lethal is a major hurdle in their development. There are concerns about the performance of these weapons as they might inflict fatal wounds or may prove poisonous to a large number of people targeted by it.<sup>18</sup> As the performance of these weapons not only depends on the weapon’s characteristics but also on the medical condition of the target, hence a decision dilemma prevails in employment.
- b. Ethical & Legal Aspects. The ROE’s are based on legal frameworks like the Geneva Conventions, International Humanitarian Law, Chemical Weapon convention, LOAC, etc., restricting use of certain weapons in peace support and war situations. It is

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<sup>16</sup> Harold Stocker, *Non-lethal Weapons: Opportunities for R&C*. Defense R&D Canada, Technical Memorandum, December 2004, <http://cradpdf.drdc-rddc.gc.ca/PDFS/unc86/p522519.pdf>, 9.

<sup>17</sup> *Ibid.*, 17-18.

<sup>18</sup> David A Koplow. *Non-Lethal Weapons: The law and policy of revolutionary technologies for the Military and Law enforcement*. Cambridge University Press, NY, USA.2006, 130-131.

pertinent to consider that these international treaties were designed for state-t- state conflicts where the armies would abide by certain code of conduct. The FSE, which involves non-state actors and also considering the technological advancement in NLW, creates a requirement for redefining the international laws for employment of forces in future conflicts.<sup>19</sup>

c. Training. Training is another formidable obstacle. With the CF's limited outlook towards crowd confrontation, training to use NLW is limited.<sup>20</sup> The employment of NLW as new tools in the FSE envisages training both in terms of their use and also in the way of thinking in employment of these weapons. The present set of doctrine and concepts of operations creates training gap for NLW employment.

d. Resource and Budgetary constraints. Budgetary cuts have a huge impact on the evolution and adaptation of new technology. The CF faces a huge setback from the procurement policy's cost effectiveness principle. It marginalises the options for employment of NLW considering that the CF "can do attitude" (achieving mission success with constraint resources) will sail them through the FSE as well.

e. Risk of Proliferation. There has been apprehensions concerning proliferations of these weapons into the hands of the enemy militaries, terrorists or domestic criminals which could further burden our Canada's military budget and complicate the battle space.<sup>21</sup> This subsequently shrinks the R&D process.

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<sup>19</sup> Harold Stocker, *Non-lethal Weapons: Opportunities for R&C*. Defense R&D Canada, Technical Memorandum, December 2004, <http://cradpdf.drdc-rddc.gc.ca/PDFS/unc86/p522519.pdf>, 8.

<sup>20</sup> David A Koplow. *Non-Lethal Weapons: The law and policy of revolutionary technologies for the Military and Law enforcement*. Cambridge University Press, NY, USA. 2006, 130-131.

<sup>21</sup> David A Koplow. *Non-Lethal Weapons: "The law and policy of revolutionary technologies for the Military and Law enforcement"*. (Cambridge University Press, NY, USA. 2006), 135-137.

f. Possibility of over reliance on NLW. There is a danger that if NLW work too well, or are at least perceived as successful, it will lead to over employment of forces in crisis situation. It may lead to greater frequency of CF deployment as NLW will offer a cheap and bloodless triumph. Another aspect to this concern arises at tactical level where the availability to access NLW may give more leeway to soldiers becoming “trigger happy”, and using force (at whatever level) irrationally (i.e., “shoot first and ask questions later”).<sup>22</sup>

g. Concentrating more on theoretical perspectives and outcomes of NLW employment can limit the evolution process. The policy makers tend to focus more on existing debates, developing into pre-conceived notions about the limitations of NLW, thereby reducing the options for applicability of new age NLW.

h. Media- The “present information age has a dramatic impact in shaping future conflicts”.<sup>23</sup> The use of NLWs in the FSE will draw impact world opinion, which would be influenced by the way the story is projected in media. Managing accurate coverage and confirming security concerns would be a difficult task. Using media as a conduit to inform the public about the capabilities and limitations of NLW will play an important role in the acceptance of NLW into the CFs arsenal.

## CONCLUSION

14. The CFs has multifarious operational roles in international and domestic operations. The FSE, dominated by people-centric operations, are prone to adverse public opinion and increased operational vulnerabilities. Minimising collateral damage in armed conflicts and peace keeping

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<sup>22</sup> *Ibid.*, 139-141.

<sup>23</sup> John Alexander, “*Future War: Non-lethal weapons in Twenty First Century Warfare*”, ST. Martin Press, New York, 1999, 162.

operations would be a key to success. Technological advancement in NLW has increased their employability in FSE; thereby achieving military and political objectives without jeopardising one's own COG. The CF's NLW employment philosophy plagued by a number of factors can be dealt with, if a more comprehensive approach is undertaken. To conclude, CFs has an operational requirement to adapt to the NLWs to deal with FSE. Strategic guidance and political endorsement will boost NLWs applicability and employability in the FSE.

## **RECOMMENDATIONS**

15. This paper has validated the importance of NLW in the FSE. It has noted the vast scope of the subject and brings out the various challenges in adapting the new technology, and anticipates a status quo until a change in Canada's approach, or an overhaul in the "think tanks fraternity" happens. Based on the above statements, the following recommendations are proposed:

- a. The formulation of a comprehensive policy and doctrine concerning NLW employment. The CF's definition for NLW should expand the scope and align itself with its allies like the US and NATO.
- b. The CF should consider NLW as a measure of force protection that can complement lethal means. This will provide commanders with alternate means in application of force, commensurate to the threat.
- c. Public awareness should be increased about the capabilities and limitations of NLWs. It is not a guarantee of the complete elimination of the risk of death, but definitely will reduce the probability of death. This public awareness will overcome a number of hurdles and ensure public support for R&D in this field.

- d. The CFs and authorizing bodies should modify the ROE's to accommodate NLW application. Wherever possible, ROE should be framed for each mission, as each mission is unique.
- e. DRDC should work closely with Canada's allies to leverage the benefits of R & D advancement. This will provide a foundation for Canada's R&D and boost studies that may yield cost effective and more reliable NLWs in the future.
- f. Once NLW are considered in Canada's policy and doctrine, we may then focus on development of operating procedures, TTPs and operational tactics. Subsequently soldiers can be trained on these weapons. It would be pertinent to mention that soldiers should be educated that the NLW are just another tool in their toolbox and not a binding factor in their application of force.
- g. The political hierarchy should be engaged and convinced about the need for NLW and their positive prospects in achieving military and political objectives. Budgetary constraints can be easily dealt with, if political and public awareness is established.
- h. Lastly, the FSE, which now involves non-state actors and entails fighting non-combatants coupled with technological advancement in NLW, creates a requirement for redefining the International laws for employment of forces in conflicts. A case for redefining international conventions should be made at national level to complement the FSE.

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