



EMPLOYMENT OF NON-LETHAL WEAPONS (NLWs) IN INDIA IN THE EMERGENT WARFARE CONTEXT

The Global Scenario

Fire power and Mobility are of great importance in the context of conventional warfare. Destruction of target with accuracy is at the heart of employment of modern precision guidance munitions (PGMs) as the new generation weapons evolve. During the second Gulf War, US forces faced a new situation where the enemy, Iraqi armed forces, merged with the population and attacked the US armed forces at will before disappearing among the crowd again. Use of high caliber weapons including PGMs often resulted in collateral damage and death of innocent civilians. Necessity of non lethal weapons was felt by the US forces at that time and a large number of developments took place in the field thereafter. The history of non-lethal weapons dates back to 1880s when the British army started using wooden bullets which were later converted into rubber and plastic bullets for the riot control.

The US is in the forefront for development of NLWs and concepts for their deployment and use alongwith the conventional lethal weapons. The nature of the emergent warfare is characterized by the Hybrid warfare, No contact warfare, Net Centric Warfare etc and its application under the constant glare of the media has given a fillip to the emergence of host of the NLWs concepts.

In this paper the NLWs have been defined, types of NLWs explained, NLWs in the Indian context analysed and a way forward for India suggested.

Non Lethal Weapons Defined

The United Nations Institute for Disarmament Research (UNIDIR) describes non-lethal weapons as specifically designed to incapacitate people or disable equipment, with minimal collateral damage to buildings and the environment; they should be discriminate and not cause unnecessary suffering; their effect should be temporary and reversible; and they should provide alternatives to, or raise the threshold for, use of lethal force. A more comprehensive definition given by the US Department of Defence is; "Weapons, devices, and munitions that are explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel, and undesired damage to property in the target area or environment. NLWs are intended to have reversible effects on personnel or materiel".

Types of Non Lethal Weapons

According to the US Department of Defence, these weapons are broadly categorised as 'counter personnel' and 'counter material'. Certain NLWs could be used against personnel as well as material. A broad range of technologies have been used for the development of these weapons. NLWs employing Acoustic, Electromagnetic, Electrical, and Kinetics technologies have already been developed and deployed. Weapons using

Biological and Chemicals agents within the limits imposed by the Biological Weapon Convention and Chemical weapon Convention have also been developed.

Counter Personnel NLWs. The counter personnel weapons have non-lethal capabilities used to debilitate individual, to deny personnel access to an area and to clear facilities. Electrical weapons including stun guns, stun batons, electrified shields, electrified nets, electrified water cannon, landmines and grenades give intense shock and could be used as anti personnel non lethal weapons. Similarly, Neural Inhibitors incapacitate personnel; paralyzing synaptic pathways, induce reversible crippling effects. Calmatives are Sedatives delivered through the lungs or skin calm and induce relaxation or slumber state, Neuroblockers Tranquilizer darts and anesthetic bullets block neuromuscular passages causing incapacitation, Active Denial System (ADS) or modified V-MADS (Vehicle Mounted Active Denial System) emit electromagnetic radiation in the form of radio wave frequency stimulates water molecules on the surface of skin activating pain sensors and causing intense pain and heat. ADS is considered a highly effective element for crowd dispersion. TASERS an electro-muscular incapacitation (EMI) device could be used in giving a sudden electric shock. In response victim feels loss of voluntary muscular control by electrical stimulation and sudden shock. Piezoelectric incapacitation projectile in the form of rubber bullet which has copper electrodes on the surface, can penetrate clothing and instantly stun the target by giving a sudden shock.

Counter Material NLWs. Counter material weapons are used on non-personnel and have capabilities which focus on acquiring non-lethal technologies capable of disabling or neutralising specific types of equipments and facilities while also denying the ability of vehicles to gain access into/out of restricted area. Biodeteriorative Microbes which degrade road and bridge surfaces, turn aviation fuel into jelly, eat rubber off vehicle

wheels, could be used as anti material non lethal weapon. Microencapsulated liquid hydrogen disables targets by degrading or cracking surfaces. Pulsed Chemical Lasers projects hot, high-pressure plasma in front of targets producing high-pressure shock wave.

Counter Personnel cum Counter Material NLWs.

Pulsed High Power Microwaves (HPM) disrupts and neutralises electronics, jams or disrupts C4ISR systems, shuts down engines, explodes ammunition, induces confusion, stupor or coma in personnel. HPM could be used as a non lethal anti personnel and anti material non lethal weapon. Close Quarters Shock Rifle (CQSR) is one concept rifle which is expected to generate a laser beam which will be able to produce an ionized gas or plasma through which an electrical charge can be conducted to the target person or vehicle giving him the intense shock. Non-Penetrating projectiles used for Crushing, deforming, spalling systems, including stinger grenades; wax, wood, and plastic bullets could also be used. Their effects vary with shapes, materials, and speed. Low Energy Lasers Includes laser rifles and anti-air laser canons which temporarily blind personnel, overloads and disables electro-optical sensors are also effective against personnel and materials.

Increasingly, combat vehicles, such as the urban variant of the Leopard 2 main battle tank, are being fitted with non-lethal weapons. The Humvee has been fitted with the Active Denial System. Future combat vehicles are likely to incorporate non-lethal weapons.

The Indian Context

Like USA, Indian armed forces engagement also draws a lot of media interest and public gaze and questions. Active engagement of non-conventional forces in Jammu and Kashmir, North Eastern States and the Maoist affected areas of the heartland is almost a routine event. The security forces have to ensure a least collateral damage while seeking and

neutralizing the terrorists and insurgents. NLWs would be of great use under these circumstances. The NLWs would always be used in conjunction with the lethal weapons. Therefore, a well considered approach would be needed to enable local commanders to decide the application of suitable weapons.

Indian Army has encountered and effectively dealt with the non conventional adversaries for a long time. The ever growing menace would require dealing with the adversaries in the buildup areas among the civilian population. Conventional weapons and doctrines would be insufficient for this role. Traditional crowd control methods would also not suffice. Therefore the development and employment of non-lethal weapons will increasingly be necessary. Doctrinal aspects of the employment of these weapons along with the lethal kinetic weapons will also have to be dealt with.

The Technology Perspective and Capability Roadmap (TPCR) of the Govt of India has identified development of Non Lethal Weapons, Sub-lethal or disabling military technology suitable in an urban or complex environment as one of the requirements. Important areas of research identified in this field are as follows:

Stun Grenades. Low impact grenades which can stun or immobilise adversaries are required to be developed.

Optical Weapons. Optical munitions to cripple sensors and dazzle, if not blind, soldiers need development.

Acoustic Weapons. Weapons that emit sonic frequencies to cause sensations as disorientation, debilitating dizziness and motion sickness or nausea, as also generating vibrations of body organs, resulting in extreme pain or seizures are anticipated to be developed.

Electro Magnetic Pulse (EMP) Weapons.

Electromagnetic weapons represent both threats and possibilities in the context of network-based defence. The EMP weapon could be used against an opponent's network. One useful aspect in the context of operations is that EMP weapons knock out electrical equipment rather than people. In future, EMP weapons may be used to counter incoming anti-ship/anti-aircraft/ anti-tank missiles or to prevent other ships/aircraft from approaching too closely.

There are many more technologies already operational or under development especially in the US. Established in 1997, the Joint Nonlethal Weapons Directorate (JNLWD) serves as the focal point for NLWs research and development efforts on behalf of the DOD. The role of the JNLWD was optimized after the Council of Foreign Relations observed in their Study Report in 2004 that “We found little evidence that the value and transformational applications of nonlethal weapons across the spectrum of conflict are appreciated by the senior leadership of the Department of Defense”. It was also felt that If NLWs are available, there is concern that U.S. armed forces will be required to use them for every situation and will be condemned if they do not do so. The concern is not only for potential legal liability but also that lives of troops will be lost by delay in resorting to effective lethal means. But it is to be understood that NLWs are a tool for achieving military goals while respecting the principles of the laws of warfare—military necessity, proportionality, discrimination, avoidance of unnecessary suffering, and minimizing collateral damage.

Suggested Approach

NLWs have the potential applications both by the Defence Forces and the CPMFs/CPFs/SPFs. Therefore a coordinated approach for the development and employment of the NLWs by the MoD and MHA would be needed and should perhaps be coordinated at the NSA level. DRDO

would also play an important role. HQ IDS could consider designating a Tri Service coordination cell/directorate for development and employment of the NLWs in India. Doctrinal aspects would also need to be considered by the cell in consultation with the DOT Branch and SHQs. Issues needing international resolutions (CWC, BWC) etc could also be addressed by the Cell.

There have been several calls for development and deployment of NLWs in India. After the Kashmir riots in 2010, when more than 150 personnel were killed, Prime Minister emphasized that NLWs for crowd control should be top priority in the future. There seems to be a little felt necessity for employment of this class of weapons by the Indian Armed Forces. There is hardly any cerebral discourse among scholars also. Indian defence forces have been facing and are likely to face more sub conventional threats in future. Urban warfare with undefined enemy is an inescapable reality. Political fallout of civilian casualties will be enormous and will have to be managed. Therefore, it may be in the long term interest of the defence forces to devise methodology for development and employment of the NLWs. Doctrinal aspects will also have to be studied.

A strategic vision, inter departmental coordination and synergy will be vital for India's futuristic NLWs development and deployment. R&D as conceived in the TPCR document is vital in order to develop technology that is in national interest. The legal framework needs to be developed to ensure the legality from international perspectives for the use of NLWs under all circumstances. International legal implications of the development and potential use of NLWs have not been fully explored. A concrete and comprehensive legal structure, especially by a world body like the United Nations, has not been fully formulated. NLWs include weapons such as microwaves, acoustical weapon, etc., which cannot be characterized either as weapons of mass destruction, or as classical conventional weapons. The existing Conventional Weapon Convention (CWC), Biological and Chemical Weapon Convention (BWC & CWC) contain some provisions covering a few aspects of development as well as the use of NLWs in certain circumstances. These provisions are required to be studied further for meeting Indian requirements.

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