Non-Lethal Technologies for Current & Future Joint Military Operations

Brief to NDIA Symposium
Parsippany, NJ
16 June 2004

Ms. Liliana McShea
Project Engineer,
NL/SE Team
US Army ARDEC
Com: (973) 724-7931
DSN: 880-7931
lsuarez@pica.army.mil
DoD Directive 3000.3, 9 Jul 96
Policy for Non-lethal Weapons (NLW)

... Designates ... Commandant of the Marine Corps Executive Agent for the DoD NLW Program ...  

... Defines NLW ... “weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.”

... Directs ... Services to participate in NLW program
Why Non Lethal?

- Use NLW to **distract, disrupt, delay, degrade or deny** threat forces, combat functions, and facilities in pursuit of operational and tactical objectives with the **minimum force necessary**.

- Provide Commanders with **additional options** for:
  - **Operational offensive measures**: Crowd control, interdiction of tactical/strategic resources, conflict intervention, hostage retrieval, Military Operations on Urban Terrain.
  - **Defensive operations**: Force Protection

- **Required Capabilities**
  - Affect Human Capabilities
  - Defeat Materiel Systems
  - Provide Security and Surveillance
  - Attack Materiel Support Systems/Infrastructure
Army NLW Program Organization

- **Army Proponent for NL Capabilities**: The U.S. Army Military Police School located at Ft. Leonard Wood, MO, is the **Proponent** for all Army Non-Lethal capabilities and corresponding combat developments and concepts.

- **Project Manager for Close Combat Systems**: The Project Manager – Close Combat Systems located at Picatinny, NJ, has program management responsibility for Army Non-Lethal **Materiel** programs, and fielding the Army’s Non-Lethal Capabilities Sets.

- **Systems Manager for Army NL Technology Integration**: The Research Development and Engineering Command - Armament, Research, Development and Engineering Center (RDECOM-ARDEC), located at Picatinny, NJ, has responsibility for leading the coordination of Army Non-Lethal **Technology** integration & development.
Non-Lethal Capabilities
An Urgent Need . . .

Since 1995, the Army has increasingly required Non-Lethal Capabilities that could be employed in Military Operations Other than War.

April 2000
TFF, KFOR, Kosovo

June 2000
TFE, SFOR, Bosnia

April 2002
SOUTHCOM, Guantanamo Bay

January 2002
ARCENT, Kuwait

Operation Enduring Freedom!
Non-Lethal Capabilities

. . . A Growing Demand

Since March 2000, ARDEC has supported PM CCS in Urgently Fielding all of the Army’s Non-Lethal Capabilities Sets.
“Bottom Line is that our new equipment works well and the NLM kept us from having to kill someone as well.” - LTC Brown, Battalion Commander, Bn 709th (Task Force Falcon Provost Marshall)
Army Non-Lethal Capabilities Set
Examples of NLCS Items

- Protective Equipment
- Training Devices/Allocations
- Enhancement Devices & Counter Materiel Systems
- Counter Personnel Systems
Lessons Learned

...Army NLCS Needs Re-Configuring...

- Responding to User feedback and field experiences, the current configuration of the NLCS will be changed to increase modularity
  - Current NLCS was considered too bulky by Users
- Re-configuration of the NLCS from a battalion sized (200 person) set to a platoon sized (30 person) set is in-process.
- The Platoon Size NLCS will include updated items:
  - Expandable baton to replace wooden baton
  - M39 Individual RCA Disperser (OC) to replace M36 IRCAD (CS)
  - M40 Practice Individual RCA Disperser (IRCAD) to replace MK 4 Practice IRCAD
  - Electro-Muscular Disruption (EMD) devices & attachments
  - Vehicle Lightweight Arresting Device (VLAD)
NATO NL Capabilities for Crowd Control Operations
Lessons Learned

...New* NL Capabilities are Needed ...

**M26 Advanced Taser®**
- 1st Urgent Fielding of this Electro-Muscular Disruption capability to U.S. Army

**FN 303 Less Lethal Launcher System**
- PM-REF, with support of ARDEC and JNLWD, rapidly equipped a ltd. quantity of this high rate-of-fire, multi-shot, blunt impact /marking capability

**XM26E Taser® & X-Rail**
- Urgently Fielded this improved EMD capability
  - 60% smaller and lighter than M26
  - Integrated weapon system capability with under-barrel attachment for the M4 Carbine with Picatinny Rail

**Vehicle Lightweight Arresting Device**
- Man portable, pre-emplaced, expendable spiked net

* - Urgent Fieldings / Rapid Equippings in support of on-going Operations
DoD Joint Non-Lethal Weapons

Core Capabilities and Functional Areas

Joint Mission Area Analysis (JMAA)

**Counter-Personnel**
- Area Denial to Personnel
- Crowd Control
- Incapacitate Ind’l Personnel
- Clear Facilities & Structure of Personnel

**Counter-Materiel**
- Area Denial to Vehicles (Vessels, Aircraft)
- Disable/Neutralize Equipment

* Functional Areas / Tasks
Prioritized by all CINC's at 1996 DoD NLW User’s Conference; Joint Concept for
NLW’s
&
per JMAA Dec 2000

JMNS Approved by JROC Dec 02

JMAA conducted IAW CJCSI 3170.01A, Requirements Generation System
M1, Portable Vehicle Arresting Barrier

The PVAB was specifically designed to provide checkpoint security without endangering or disrupting normal traffic

- When emplaced, it resembles a standard speed bump, but has the NL capability of stopping a 7,500 lb vehicle at speeds up to 45 mph

Complete System (packaged) weighs in at 1100 lbs.  
(< 650 lb unpacked)

Depleys in 1.5 seconds

Designed to be installed by 2 soldiers in under 3 hours, or in < 30 Minutes with expedient anchoring
Area Denial-Personnel

“System-of-Systems” Operational Concept

JOINT USER PAYOFF

Capable of Selecting Pre-emplaced NL to Lethal Effect as Required

Control Station

Hand-Emplaced NL Munition(s) (HENLM)
Mk19 NL Munition-Short Range (XM1057)

- Rapid-fire, Short Range, Crowd Dispersal capability
- Uses Existing Joint Service Crew-Served Weapon
- Applicable to Ground and Vehicle Mounted Mk19’s
- Based on Kosovo After Action Report
Airburst Non-Lethal Munition

for the XM25 / XM29 Integrated Air Burst Weapon System
(formerly Objective Individual Combat Weapon)

USER PAYOFF

• Long Range (250+ m) Counter Personnel capability for Individual Soldier
• Range Selectable NL Airburst Capability
• NL Rd for Objective Force Individual Weapon system
• Maintains dual L / NL system capability ("binary" scaleable effects) in an integrated weapon system
Non-Lethal Mortar Munition

USER PAYOFF

- Long Range (2+ km)
- Only Indirect Fire NL capability
- Deployable from Existing Platforms (60mm, 81mm, 120mm)
- Applicable to Stryker Brigade Combat Team and FCS increment I
- NL Cargo Round for multiple potential NL & other payloads (e.g., illumination, smoke)
Other NL Technology Opportunities

- Integrated Weapon Systems with NL to L Capability

- Advanced Kinetics
  - Controlled Kinetic Energy Weapon

- Ballistically Projected Electro Muscular Disruption
  - Single Wire
  - Tetherless

- Integration of NL Capabilities into Unmanned Robotic Vehicles
  - Unmanned Ground Vehicles
  - Unmanned Aerial Vehicles
Roadmap for Army NL/Scaleable Effects Capabilities

Fiscal Year

98 00 02 04 06 08 10 12

Direct Fire Function

Infantry Carrier Function

Indirect Fire Function

* Manned or unmanned

Organic & inorganic RSTA

Networke d Comms

Vision-supported Full spectrum relevance/use Army Future Force/FCS

Tactical/Operational NLW - includes Directed Energy Weapons (DEW) Possible Strategic Options TO&E inclusion

JMAA

Joint NL Vision

Militarized NL Weapons Tactical (USA Capabilities Set) Joint Service RDA

Longer Range

COTS/ NDI NL Weapons Tactical/Force Protection • US Army Capabilities Set

Vision-supported Full spectrum relevance/use Army Future Force/FCS

Tactical/Operational NLW - includes Directed Energy Weapons (DEW) Possible Strategic Options TO&E inclusion

JMAA

Joint NL Vision

Militarized NL Weapons Tactical (USA Capabilities Set) Joint Service RDA

Longer Range

COTS/ NDI NL Weapons Tactical/Force Protection • US Army Capabilities Set
Conclusions

- Non-Lethal capabilities are in use, and proving their effectiveness, in the Army & Joint Services

- Non-Lethal needs and capabilities will continue to grow in the Future Force

- New, improved and integrated NL technologies will be required capabilities in the Current to Future Force and Joint Military Operations

- Technology advancements in Kinetic, Conducted and Directed Energy will offer integrated weapon systems capabilities with Scaleable Effects across the force spectrum