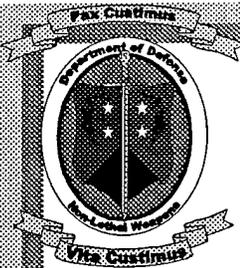


The U.S. Department of Defense Joint Non-Lethal Weapons Program



The Role of Non-Lethal Weapons in Military Operations



PURPOSE

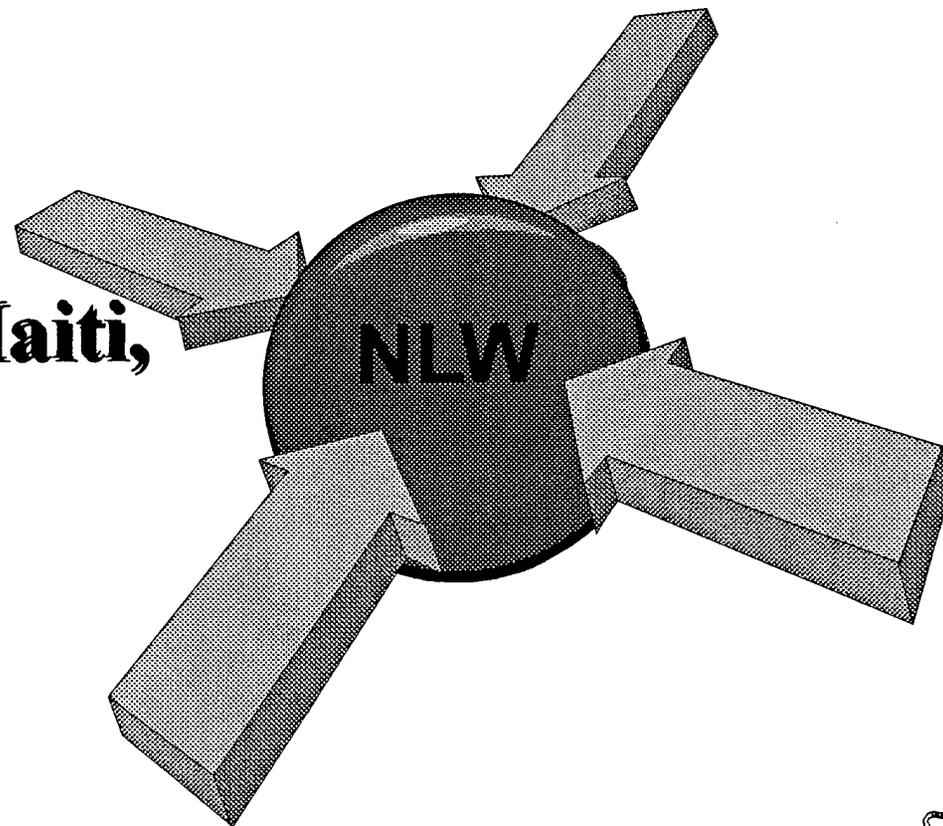
**To provide an overview of the role
non-lethal weapons have played and
might play in military operations**





Where We Came From

- **1970/80's many disjointed efforts**
- **1990's: Somalia, Haiti, Bosnia**
- **General Zinni**
- **Congress & OSD**



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The Real World

✦ **Haiti/Bosnia**

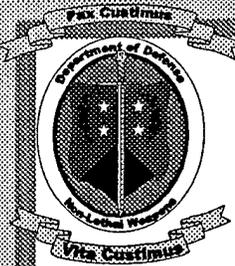
✦ **Iraq**

✦ **Panama ?**

✦ **Cuba ?**

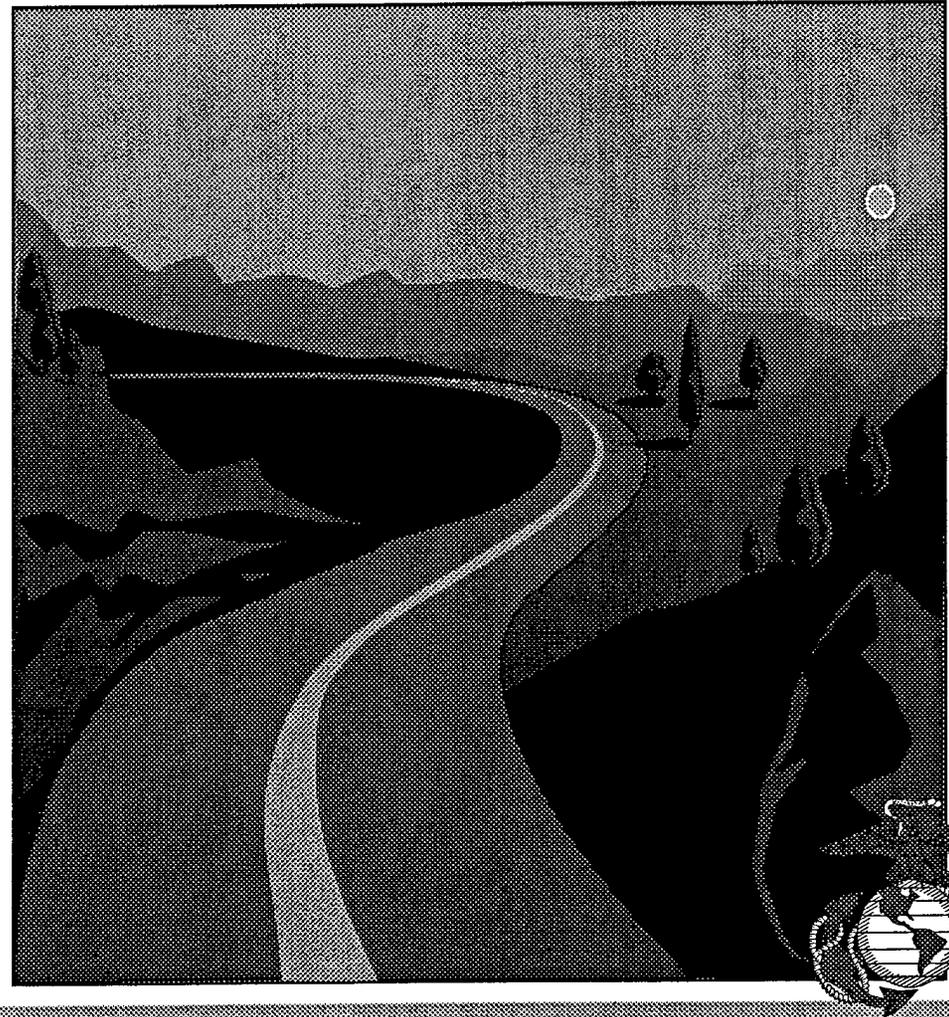
✦ **NEOs ?**





Where We Are Headed

- **A joint, coordinated and focused effort**
- **Oriented toward more rapid fielding**
- **Blend of low tech, near-term with high tech, long range**



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BOSNIA LESSONS

- ✓ **Level of knowledge in theater**
- ✓ **Highly charged, political environment**
- ✓ **Available munitions/Other NL options**
- ✓ **Tactical employment concepts**
- ✓ **Sticky foam**





Rules of Engagement - NLWs

"Emerging Concepts"

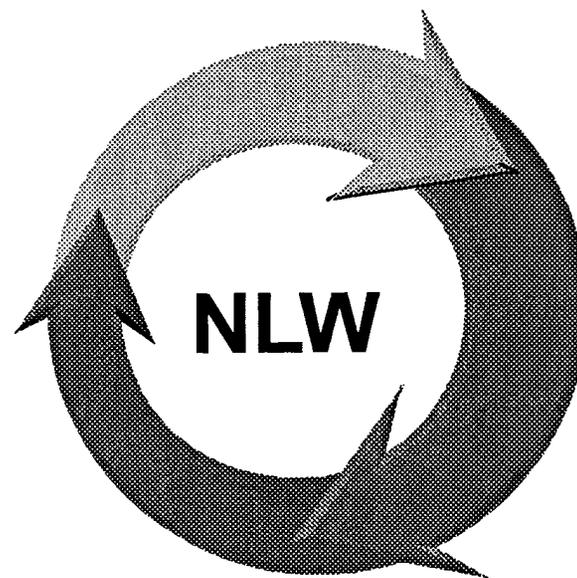
- ✦ **RCAs can not be addressed separately**
- ✦ **No such thing as 100% non-lethality**
- ✦ **NLWs always backed by lethal force**
- ✦ **Availability does not limit commander**
- ✦ **Need to define term "measured response"**
- ✦ **Force protection primary consideration**

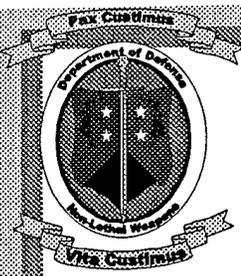




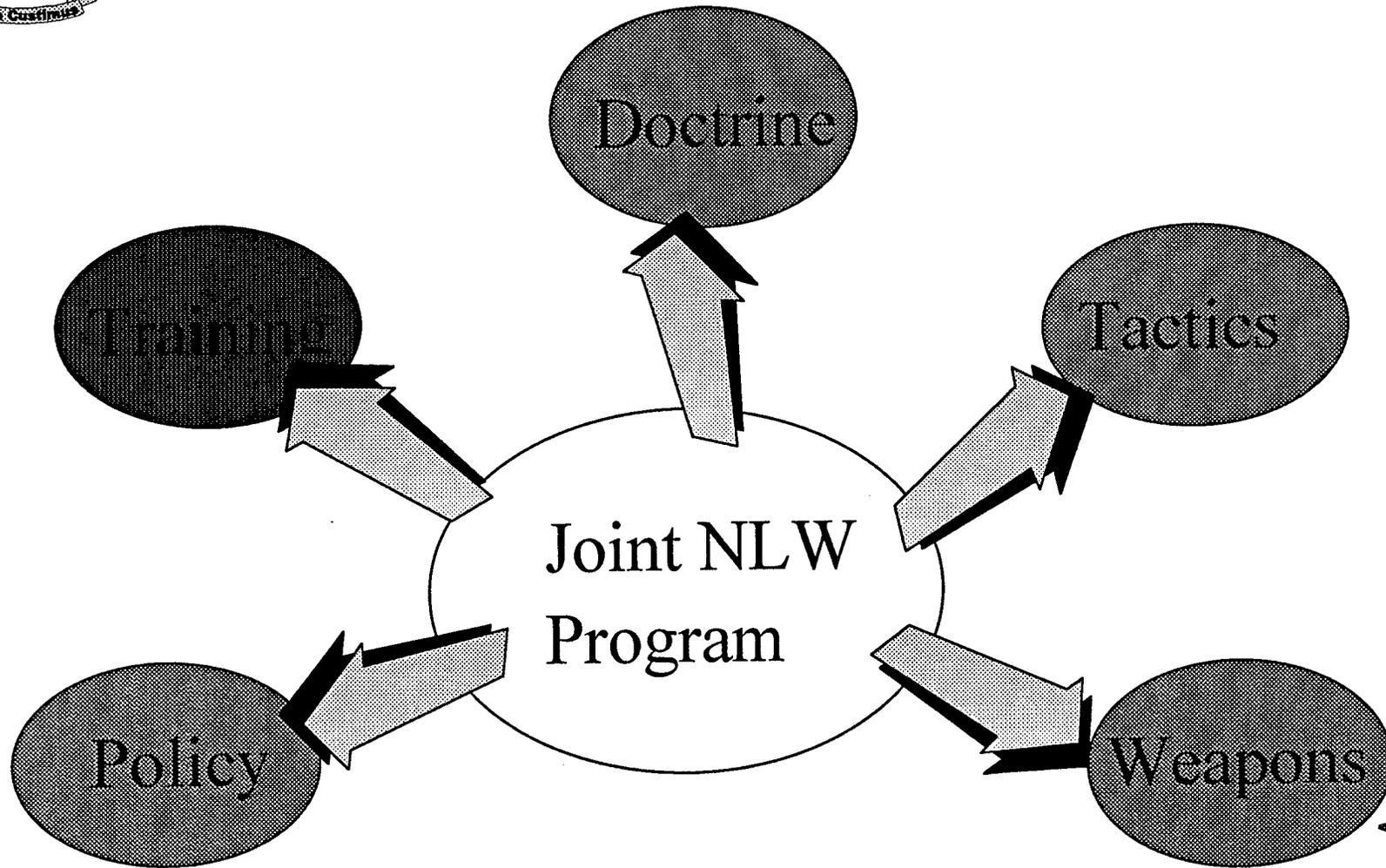
The ROE Challenge

- **Non-lethal vs lethal**
- **Tactical vs strategic**
- **Assist vs restrict**





The NLW "Environment"



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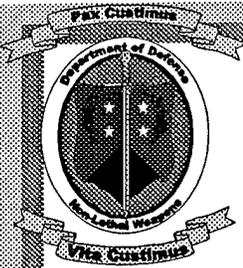


The Joint NLW Concept

"Guiding Principles"

- ★ **Leverage High Technology**
- ★ **Enhance Operations**
- ★ **Augment Deadly (Lethal) Force**
- ★ **Provide Rheostatic Capability**
- ★ **Focus on Tactical Applications**
- ★ **Expeditionary**
- ★ **Acceptable**
- ★ **Reversible Effects**





The Joint NLW Concept

"Core Capabilities"

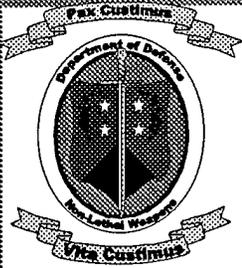
■ Counter-Personnel

- **Crowd Control**
- **Incapacitate Individuals**
- **Deny Access**
- **Clear Facilities/Structures**

■ Counter-Materiel

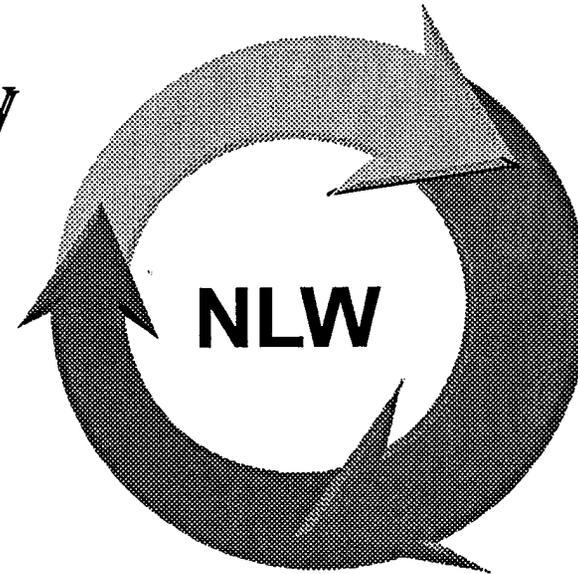
- **Area Denial (land, sea and/or air space)**
- **Disable/Neutralize Equipment or Facilities**





Current NLW Objectives

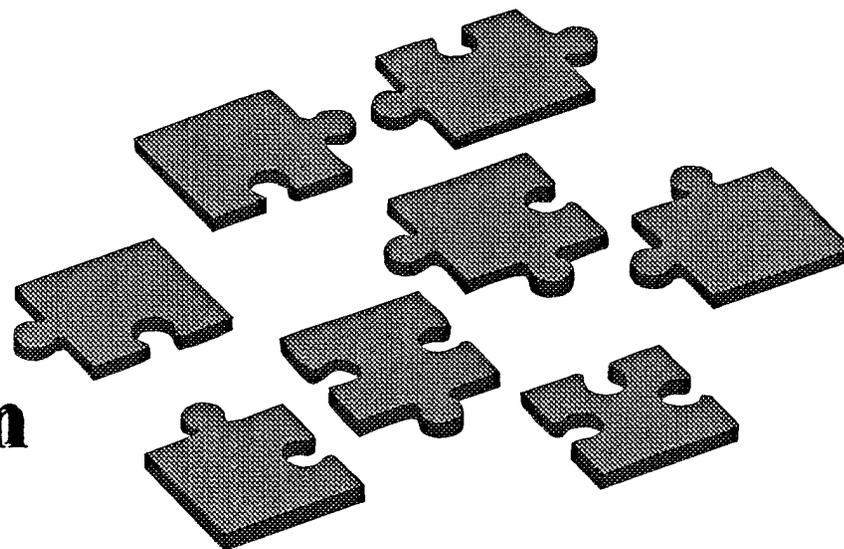
- **Flesh out MEU Sets**
- **Continue contingency support**
- **Formalize training concept**
- **Meet or beat fielding timelines**
- **Realize a sea-based NL strike capability**





Non-Lethal Weapons Research & Development

- **Funded Projects**
- **Experimentation**
- **Modeling/Simulation**
- **Tech Investment**



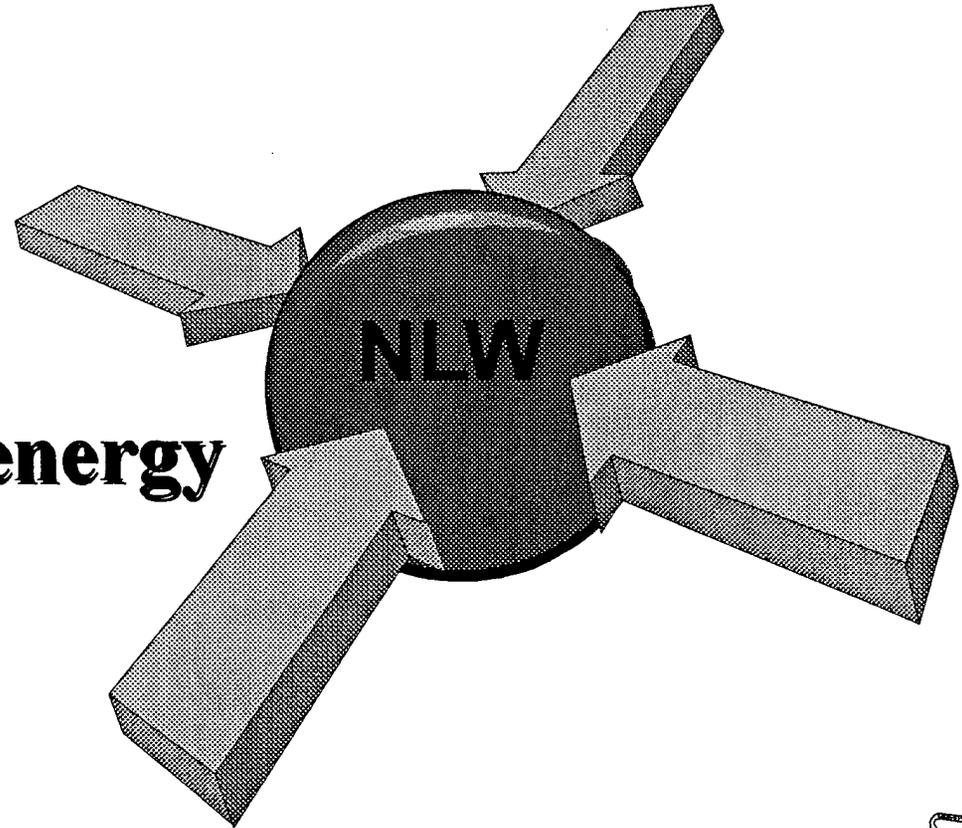
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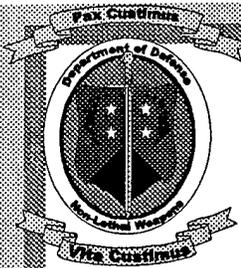




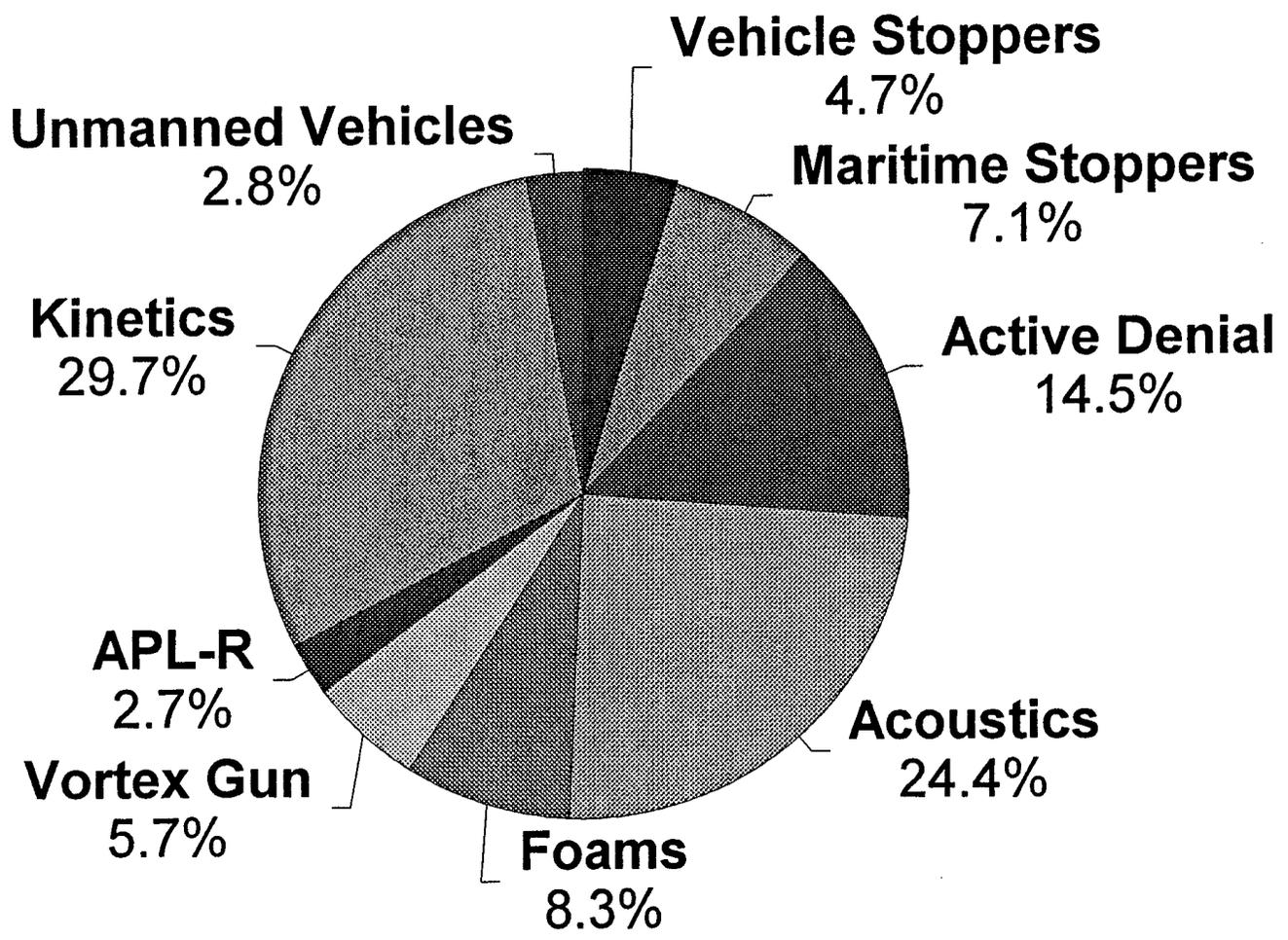
The Technology

- ⚡ **Kinetic energy**
- ⚡ **Acoustic energy**
- ⚡ **Electromagnetic energy**
- ⚡ **Chemicals/RCAAs**
- ⚡ **Other (IW, C2W, lasers)**



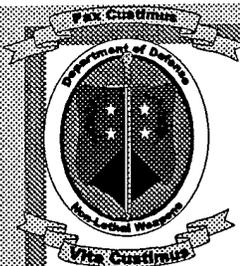


Technology Breakout

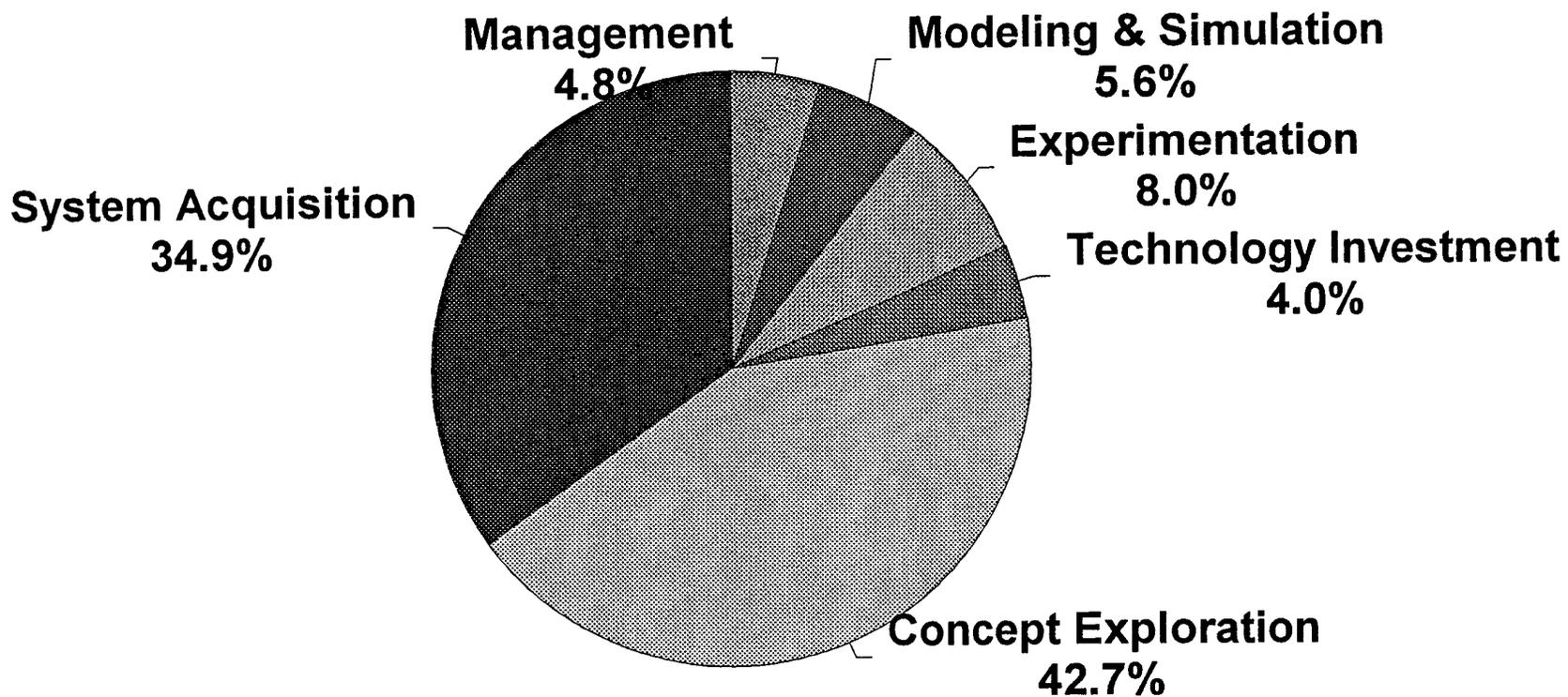


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Year 2000 Funding Overview





Joint Services NLW Training

- Builds on past experience**
- Recognizes individual Services' training requirements**
- Comprehensive NL training package for resident trainer and user course, and mobile training capability**
- Training includes tactics, communications, crowd dynamics, weapons/munitions, and rules of engagement**

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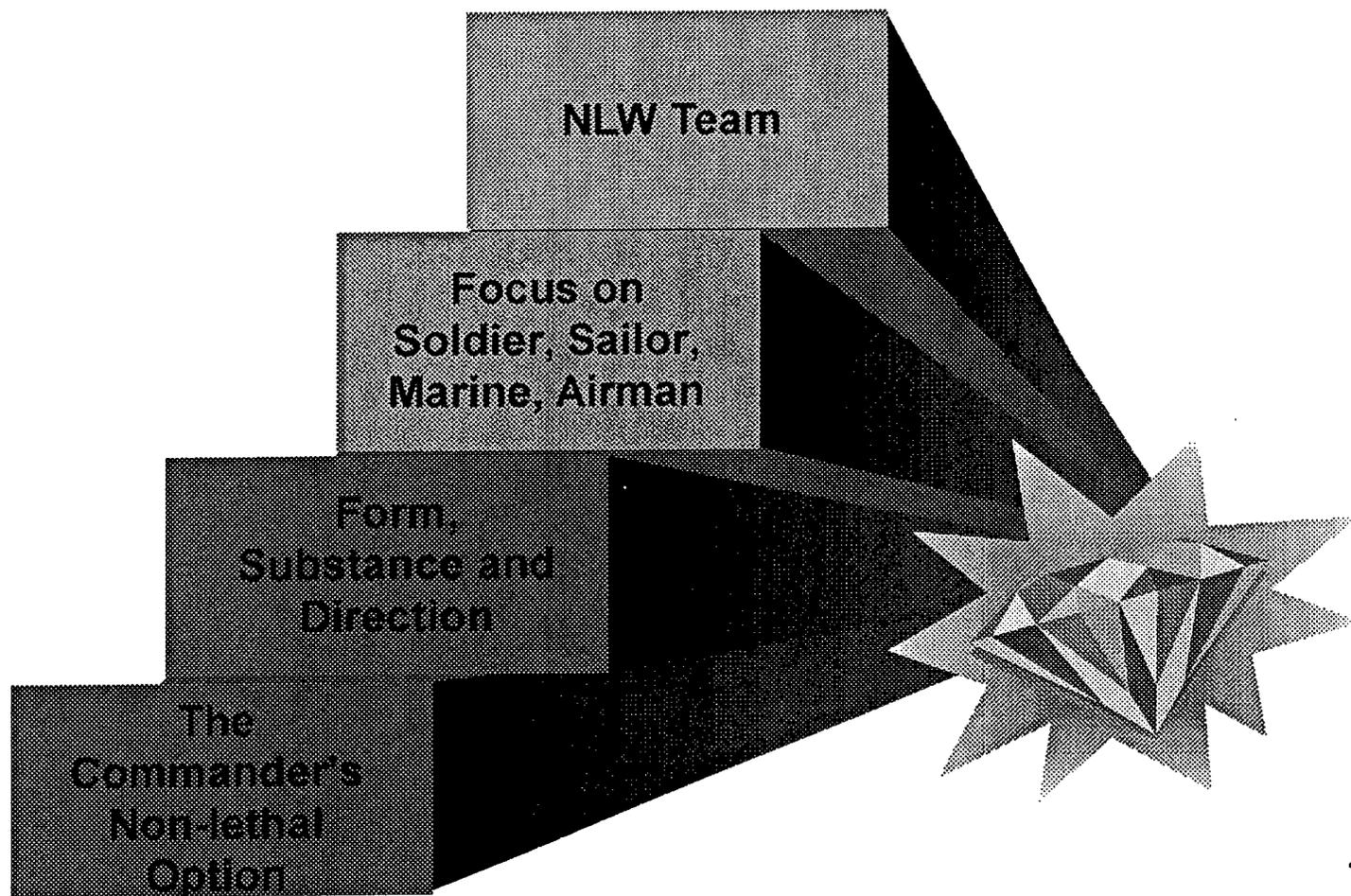
Other NLW Initiatives

- **DOD NLW Web Site**
- **DOD NLW Database**
- **Human Effects Advisory Board**
- **Co-sponsor NLWD II Conference (2/98)**
- **Foreign Information Exchange**



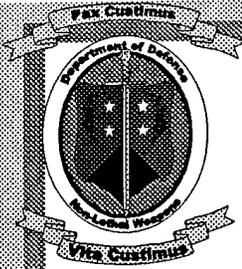


Summary



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QUESTIONS ?

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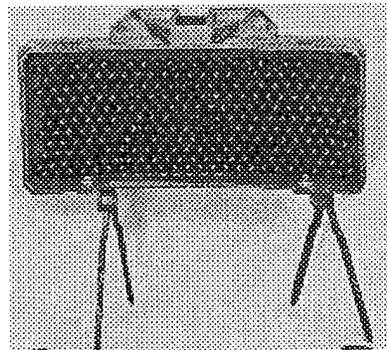
BACK-UP PROJECT SLIDES

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Modular Crowd Control Muniton (MCCM)



Objective:

To field a nonlethal system for incapacitating personnel with an area coverage of stinging rubber balls using an existing claymore mine dispenser.

Payoff:

Provides a less-than-lethal means to break up large groups of hostile personnel. Capable of mounting on vehicles with special mounting brackets.

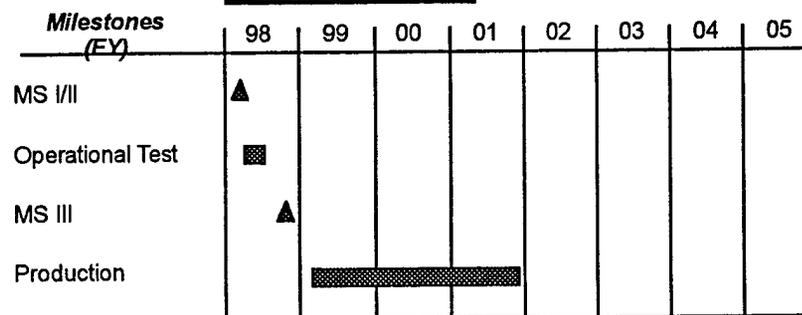
Approach:

- Transition Technology to PM-MCD
- Joint Service ORD
- Operational Test
- MS III (Type Classification)

Name: Mr. Joe Restaino
 Org: Program Manager, Mines, Countermines and Demolitions
 Phone: (C) (973) 724-6058
 (DSN) 880-6058
 Fax: (973) 724-3669

-Production Contract

Schedule



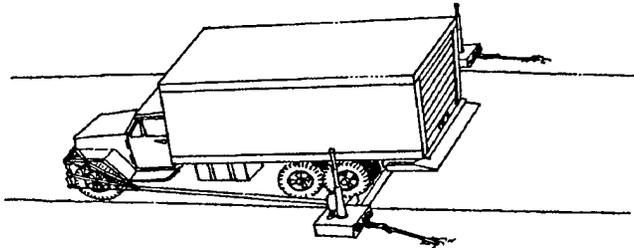
Funding (\$K):

EMD	1,130				
Production					
US Army		1,000	2,500		
USMC/USAF			TBD	TBD	





Speed Bump



Objective:

To field a "vehicle immobilizer" system that can be used to stop a 5,100 pound wheeled or tracked vehicle traveling at 40-60 mph trying to run a barrier. The objective is to stop the vehicle within 200 feet without fatalities or serious injury to the vehicle or occupants.

Payoff:

Provides a capability to control vehicle access and movements where lethal response is not authorized. Can be used to prevent use of a bridge or other choke point or to channelize traffic.

Approach:

-Proof-of-Principle Demonstration

-Joint ORD

-Transition to PM-MCD

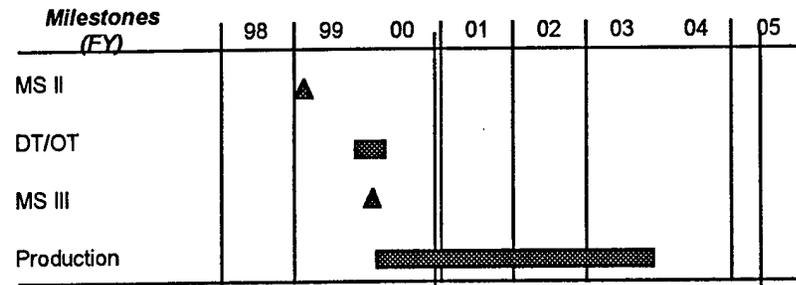
-MS II Decision

-Combined DT/OT

-MS III (Type Classification)

Name: Mr. David Millette
 Org: ARDEC, Picatinney, NJ
 Phone: (C) (973) 724-6246
 (DSN) 880-6246
 Fax: (973) 724-7068

Schedule



Funding (\$K):

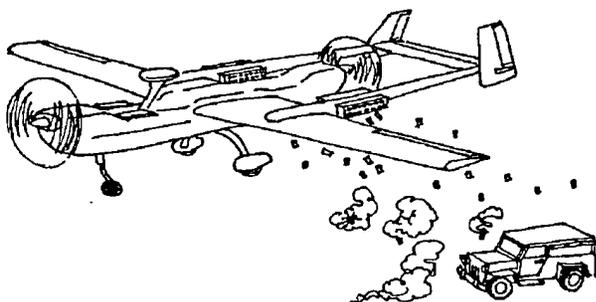
EMD	1,000	1,700		
Production				
US Army			TBD	
USMC/AF			TBD	



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UAV Delivery System and NL Payloads



Objective:

To develop and field a UAV NL payload delivery system with a family of nonlethal munitions. The system will be used to neutralize dangerous situations with minimal risk to ground forces. The anticipated nonlethal payloads include riot control agents and pyrotechnics.

Payoff:

Provides a long-range delivery means to deploy nonlethal irritants to affect large crowds in a MOUT environment.

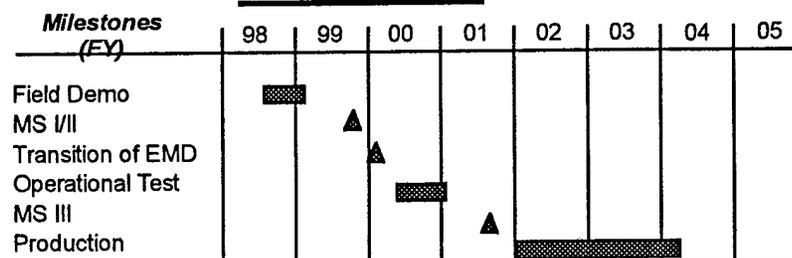
Approach:

- Field demonstrations (up to five other payloads)
- Downselect submunitions
- Transition to EMD Phase
- Operational test

Name: Mr. Mike Abaie
 Org: NSWC Dahlgren, VA
 Phone: (C) (540) 653-2719
 (DSN)
 249-2719
 Fax: (540) 653-2687

- MS III (Type Classification)
- Production Contract

Schedule

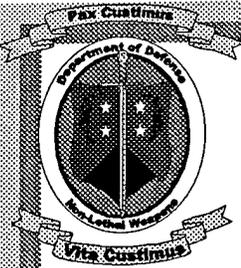


Funding (\$K):

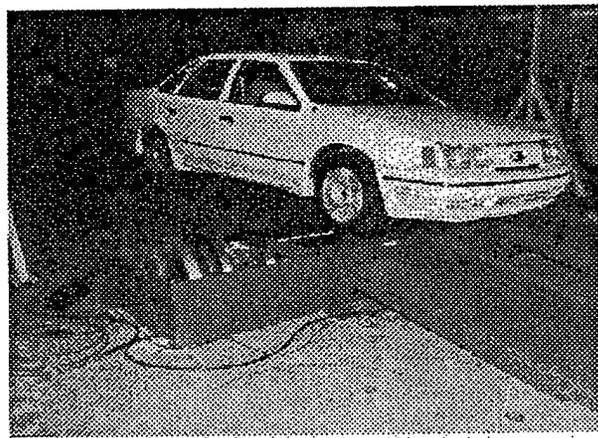
Conc. Exp.	600							
DemVal								
EMD			1,100	1,000	1,000			
Production								
US Army							TBD	
USMC							TBD	
US NAVY							TBD	

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Ground Vehicle Stoppers (GVS)



Objective:

To design, build, and demonstrate the capability to generate and deliver electromagnetic radiation at high-power levels from a mobile or ground-based microwave source that can be used by military personnel to selectively stop moving vehicles without causing permanent damage or injury to personnel.

Payoff:

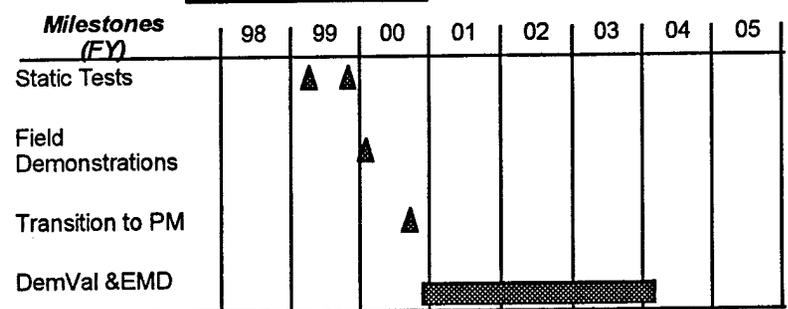
Provides the capability to immobilize vehicles by burning out the electronic components and by interfering with communications.

Approach:

- Static tests
- Joint ORD
- Develop prototype
- Field demonstration
- Transition to a PM

Name: Mr. Mark D. Berry
 Org: Army Research Lab
 Phone: (C) (301) 394-1228
 (DSN) 290-1228
 Fax: (301) 394-2525

Schedule

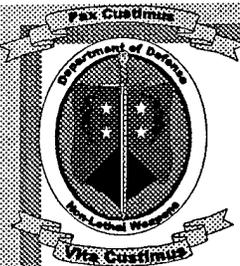


Funding (\$K):

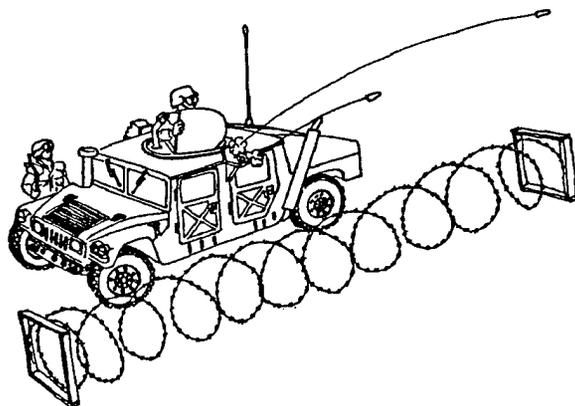
Conc. Exp.	1,050	1,200	825					
PD/RR				525				
EMD						600	600	
Production								TBD
US Army/USMC/USN								



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66mm Systems



Objective:

To field a riot control capability that can be used at standoff distances from current vehicle-mounted launchers. This effort incorporates riot control grenade alternatives into the design of the current 66mm smoke grenade. Two nonlethal cartridges, a "stingball" and a "flash bang" distraction round, are being considered.

Payoff:

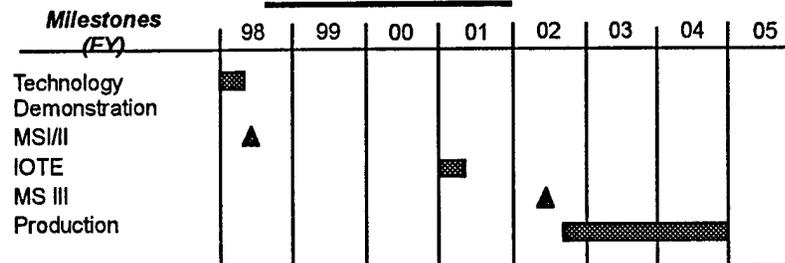
Provides long range, indirect-fire munitions that can be used to apply the minimum force necessary for crowd control and site and area security missions.

Approach:

- Technology Demonstration
- MS I/II Decision
- User Evaluations
- Operational test
- MS III Type Classification

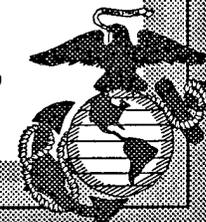
Name: Mr. Marty Sennet
 Org: ERDEC, Edgewood, MD
 Phone: (C) (410) 671-2139
 (DSN) 584-2139
 Fax: (410) 671-

Schedule



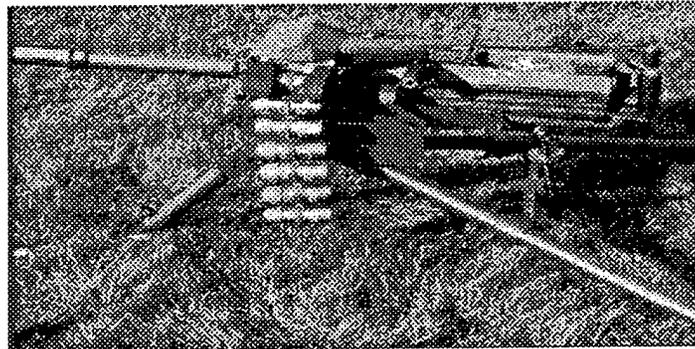
Funding (\$K):

Conc. Exp.	98	99	00	01	02	03	04	05
PD/RR								
EMD		640	600	1,700	1,125	1,000		
Production								
US Army								TBD
USMC								TBD
US Air Force								





Vortex Ring Gun (VRG)



Objective:

To design, build, and successfully demonstrate the capability to produce combustion-driver, ring vortices from the standard MK19 Genade Machine Gun that will deter and disorient hostile individuals or crowds. The effort includes integration of concussion, flash, chemical, and impulse methods into a single delivery system capable of being focused onto a specific individual.

Payoff:

Provides a means to incapacitate a targeted individual with controlled, directed vortices.

Approach:

- Propellant, Nozzle, Injector Tests
- Define Critical Parameters
- Construct Prototype Hardware
- Target Effects Tests
- Field Demonstration
- Transition to PM

Name: Mr. George Lucey
 Org: Army Research Lab
 Phone: (C) (301) 394-4342
 (DSN) 290-4342
 Fax: (301) 394-1416

Schedule

Milestones (FY)	98	99	00	01	02	03	04	05
Laboratory Test	■							
Prototype Hardware		▲						
Field Demonstration		■						
Transition to PM			▲					

Funding (\$K):

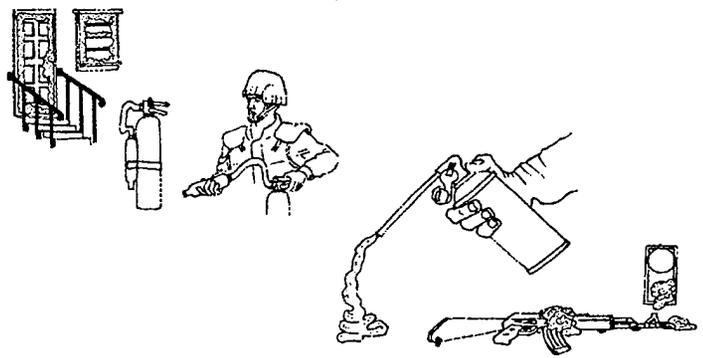
Conc. Exp.								
PD/RR	458	500	1,000	1,245	1,000	1,000	500	800
EMD								
Production (TBD)								



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Foam Applications



Objective:

To field a new dispensing system (hand-held or shoulder-slung) and rigid foam material (with strong adhesive and cohesive properties) that can be used in a variety of applications such as area denial (sealing of building entrances) and anti-materiel applications (disable materiel such as small arms).

Payoff:

Provides a means seal doors and windows in order to deny access to riotous personnel in MOUT environments. Also may provide capability to deactivate anti-personnel mines.

Approach:

- Warfighting Laboratory Experiment (MCWL)
- Optimization of System Properties
- MS I/II Decision
- DT/ OT
- MS III Decision
- Follow-on Efforts (Other type foams)

Name: Mr. Larry Bickford
 Org: ERDEC, Edgewood, MD
 Phone: (C) (410) 671-2231
 (DSN) 584-2231
 Fax: (410)-671-2748

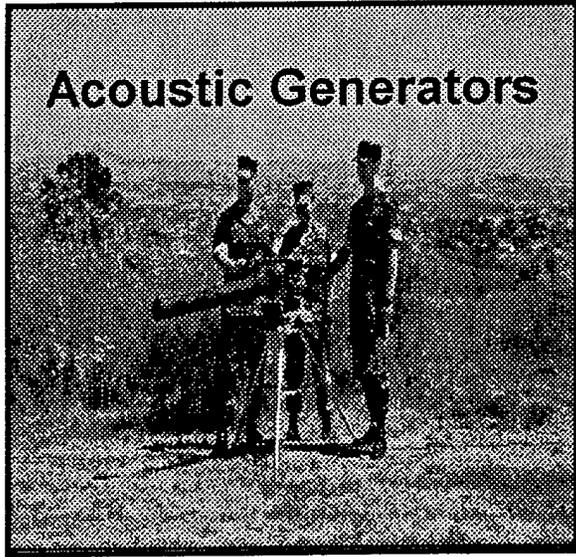
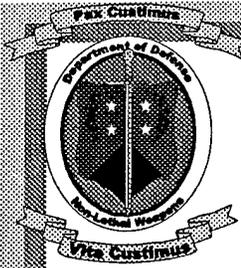
Schedule

Milestones (FY)	98	99	00	01	02	03	04	05
Battle Lab Experiment	▲							
Optimization Effort		■						
MSI/II		▲						
DT/OT			■					
MS III				▲				
Additional Applications				■				

Funding (\$K):

Conc. Exp.	300	198					
PD/RR							
EMD				1,470	1,200	200	
Production							
US Army /USMC/USAF					TBD	TBD	





Acoustic Generators

Objective:

In conjunction with the Acoustics Bio-Effects program, this effort will initiate limited design, fabrication, and testing of a combustion driven prototype system that can be used to direct the energies away from the user and aimed towards a crowd.

Payoff:

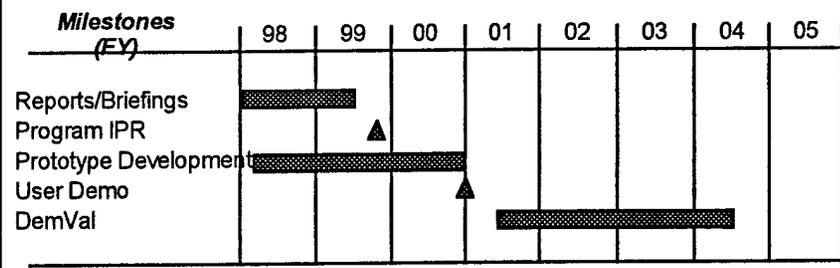
The human physiological response to the various anti-personnel acoustic phenomena must be understood and appropriate safety analysis completed prior to decisions to proceed with the development of accurate weapon. Early prototype design will support this analysis.

Approach:

- Preparation of Test Reports (from FY97/98 effort)
- Acoustics Program IPR (Go/No-Go Decision)
- Design/Fabricate Prototype
- User Demonstration
- Transition to PD/RR

Name: Mr. Harry Moore
 Org: ARDEC, Picatinney, NJ
 Phone: (C) (973) 724-7932
 (DSN) 880-7932
 Fax: (973) 724-3793

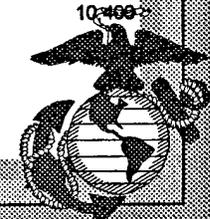
Schedule



Funding (\$K):

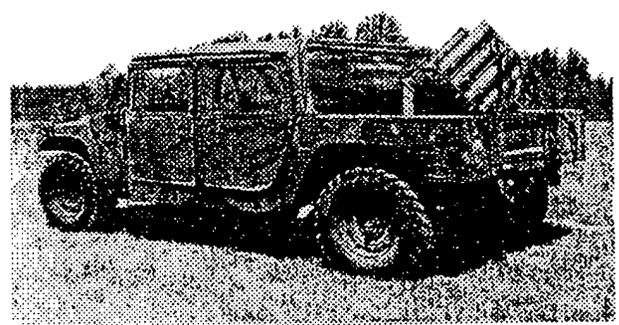
Conc. Exp.	500	700	4,300					
PD/RR				6,340	7,420	7,920	10,400	
EMD								
Production (TBD)								

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Canister Launched Area Denial System (CLADS)



Objective:

To field an area denial system that creates a rapidly deployed concertina-type barrier/deterrent that is fired from the Volcano Mine Dispenser at stand off distances.

Payoff:

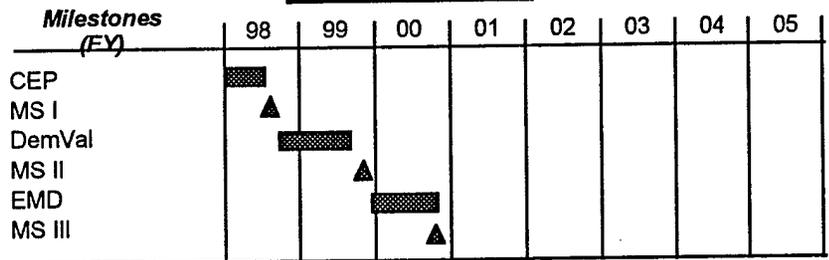
Provides a temporary barrier using concertina wire (or an alternate payload) across the entrance to a compound or a road to prevent the free flow of individuals and vehicles.

Approach:

- Concept Evaluation Program
- MS I Decision
- Transition to PM-MCD for DemVal
- MS II Decision
- EMD Phase
- MS III (Type Cassify)

Name: Mr. David Millette
 Org: ARDEC Picatinney, NJ
 Phone: (C) (973) 724-6246
 (DSN) 880-6246
 Fax: (973) 724-7068

Schedule



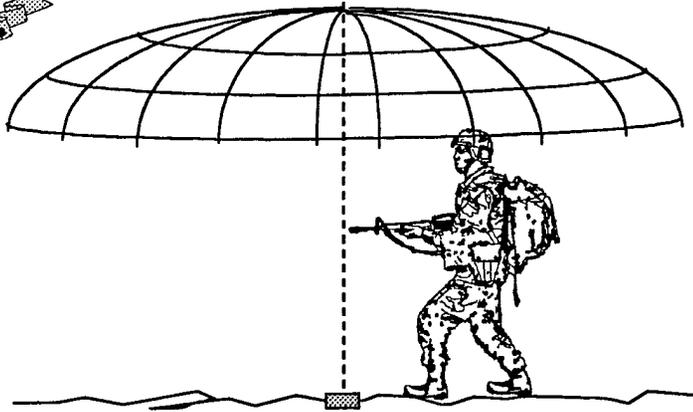
Funding (\$K):

Conc. Exp.								
PD/RR	1,260							
EMD		1,000	1,550					
Production								
US Army					4,300	4,300		
USMC/USAF					TBD	TBD		





Bounding NL Muniton



Objective:

To field a nonlethal muniton for site security and perimeter defense that functions similar to the tactical bounding APERS mine. Potential immobilization technologies include malodorous substances, riot control agents, and entanglement nets.

Payoff:

Provides a nonlethal payload from a tactical bounding anti-personnel muniton.

Approach:

- Proof-of-Principle Demonstration
- Down-select payload
- Milestone I/II Decision
- EMD Phase

-Milestone III (Type classify)

Name: Ms. Doreen Chaplin
 Org: Program Manager Mines
 Countermines and Demolitions
 Phone: (C) (973) 724-7573
 (DSN) 880-7573
 Fax: (973) 724-3669

Schedule

Milestones (FY)	98	99	00	01	02	03	04	05
Proof-of-Principle Demo	▲							
Down select	▲							
EMD Phase		■						
MS III			▲					

Funding (\$K):

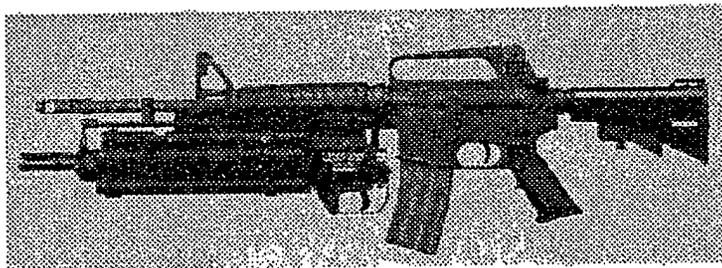
Conc. Exp.								
DemVal	950							
EMD		1,600	500					
Production								
US Army/USMC/USAF								
						TBD		



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Under Barrel Tactical Payload System (UBTPS)



Objective:

To field a tactical NL payload delivery system that can be mounted under the barrel of the M16A2/M4 to deliver NL payloads that will temporarily incapacitate personnel

Payoff:

Provides a means for small unit leaders to temporarily incapacitate targeted individual from 20-100 meters.

Approach:

-Warfighting Laboratory Experiment (DBBL)

-Transition to PM Small Arms

-MS I/II Decision

-Operational Test

-MS III (Type Classification)

Name: Ms. Hildi Libby
 Org: Army Non-Lethal team
 Phone: (C) (973) 724-6053
 (DSN) 880-6053
 Fax: (973) 724-7068

Schedule

Milestones (FY)	98	99	00	01	02	03	04	05
Battle Lab Experiment	■							
MS I/II	▲							
Operational Test		■						
MS III				▲				

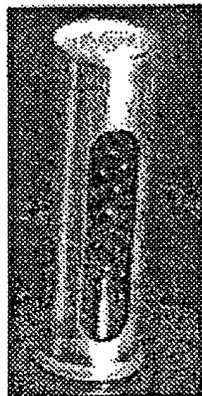
Funding (\$K):

PD/RR	340						
EMD		650	985	794			
Production							
US Army						TBD	
US Navy						TBD	





Non-lethal Crowd Dispersing Round (NCDR)



Objective:

To field a nonlethal round of munition for the M203 Grenade Launcher for crowd control and vehicle protection. The payload will be 24 rubber balls.

Payoff:

Provides a means to incapacitate a targeted individual with nonlethal blunt trauma from 10-30 meters.

Approach:

-Joint Service ORD

-RFP to industry (Performance Spec)

-Contract Award

-Combined DT/OT

-MS III (Type classification)

-Production Contract

Name: Mr. Allen Li
 Org: Program Manager Small Arms
 Phone: (C) (973) 724-4042
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 Fax: (973) 724-2139

Schedule

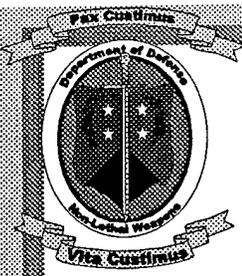
Milestones (FY)	98	99	00	01	02	03	04	05
Bid Sample test		▲						
DT/OT			■					
MS III			▲					
Production			■	■	■	■	■	

Funding (\$K):

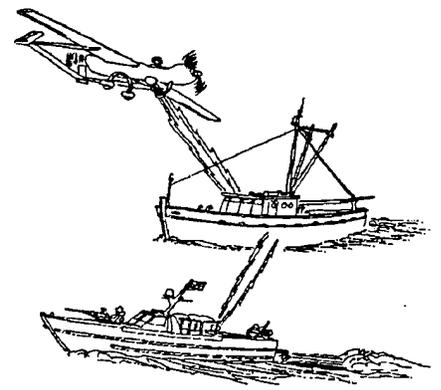
PD/RR	60							
EMD	545	670	180					
Production								
US Army				1,600	2,000	2,100		
Others					TBD	TBD		



Director, Joint Non-Lethal Weapons



Maritime Vessel Stoppers (MVS)



Objective:

To design, build, and successfully demonstrate a device that will disable small inboard diesel powered surface vessels without injury to the occupants.

Payoff:

Provides friendly forces with a nonlethal method of ascertaining the intentions of personnel aboard a vessel and alleviates conflicts with ROEs and political constraints in addressing a situation.

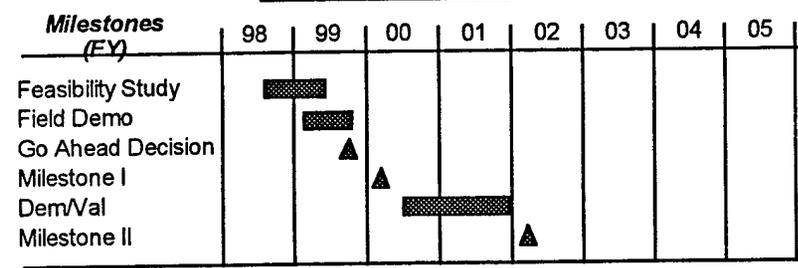
Approach:

- Fleet Input
- Down select targets/concept
- Feasibility Study
- In-Progress Review (Go decision)

Name: Mr. Mike Abaie
 Org: NSWC Dahlgren, VA
 Phone: (C) (540) 653-2719
 (DSN) 249-2719
 Fax: (540) 653-2687
 Decision

- Field Demonstration
- Milestone I

Schedule



Funding (\$K):

Conc. Exp.	1,050	1,200						
PD/RR				1,250	1,500			
EMD						2,000	3,000	1,000
Production								
US Navy								

Director, Joint Non-Lethal Weapons

