FY 2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2008
Exhibit R-2

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603651M
PROGRAM ELEMENT TITLE: JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT

COST: (Dollars in Thousands)

Project Number & Title	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
Total PE	1,400	10,736	11,020	11,167	11,384	11,628	11,956
3022 JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	1,400	10,736	11,020	11,167	11,384	11,628	11,956

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The DOD's Joint Non-Lethal Weapons Program (JNLWP) was established by the Secretary of Defense, who assigned centralized responsibility for DOD joint research and development of non-lethal technology to the Commandant of the Marine Corps as the Executive Agent. The Under Secretary of Defense for Acquisition, Technology and Logistics provides direct oversight of the JNLWP.

The efforts described in this Program Element (PE) reflect science and technology (S&T) investment decisions provided by the Joint NLW Integrated Product Team, a multi-service flag level corporate board that executes the JNLWP for the Commandant of the Marine Corps. This direction is based on the needs and capabilities of the Services, the Special Operations Command, and the Coast Guard, as identified in the DoD's Non-Lethal Weapons Joint Capabilities Document. This coordinated joint S&T development approach addresses mutual capability gaps and assures the best non-lethal technologies and equipment areprovided to the operating forces while eliminating duplicative service S&T investment.

This program funds the research and development of next-generation Non-Lethal Weapons (NLWs) and includes performing analysis, technical development efforts, and modeling and simulation necessary to ensure optimum weaponizing and use of these NLWs. Next-generation NLW systems focus on long-range localized Non-Lethal (NL) effects to identified threat individuals (or groups of individuals) and/or their threat weapons systems operating in complicated environments such as urban areas, crowds, buildings, vehicles, boats and also in close proximity to high-value civilian establishments. This program transitioned from Program Element (PE) 0603114N, Power Projection Advanced Technology by order of the Under Secretary of Defense for Acquisition, Technology, and Logistics to establish a separate PE for Joint Non-Lethal Weapons Technology Development and to establish the Marine Corps as the Executive Agent for DoD Joint Non-Lethal Weapons RDT&E.

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603651M
PROGRAM ELEMENT TITLE: JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

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B. PROGRAM CHANGE SUMMARY:

	FY 2007	FY 2008	FY 2009
FY 2008/FY 2009 President's Budget Submission	1,400	10,938	10,997
Congressional Undistributed Reductions/Rescissions	0	-69	0
Rate Adjustments	0	0	23
SBIR Assessment	0	-133	0
FY 2009 President's Budget Submission	1,400	10,736	11,020

PROGRAM CHANGE SUMMARY EXPLANATION:
Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY:
Not applicable.

D. ACQUISITION STRATEGY:
Not applicable.

E. PERFORMANCE METRICS:
The primary objective of this Program Element is the development of technologies that lead to the next-generation of Non-Lethal Weapons. The program consists of a collection of projects that range from studies and analyses to the development and evaluation of feasibility demonstration models. Individual project metrics reflect the technical goals of each specific project. Typical metrics include both the effectiveness of the technology, human effects and effectiveness, and potential for compliance with policy and legislation. Overarching considerations include the advancement of related Technology Readiness Levels and Human Effects Readiness Levels, the degree to which project investments are leveraged with other performers, reduction in life cycle cost upon application of the technology, and the identification of opportunities to transition technology to higher categories of development.

BUDGET ACTIVITY: 03
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COST: (Dollars in Thousands)

Project Number & Title	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
3022 JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	1,400	10,736	11,020	11,167	11,384	11,628	11,956

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds the research and development of next-generation NLWs and includes performing analysis, technical development efforts, and modeling and simulation necessary to ensure optimum weaponizing and use of these NLWs. Investment areas include research and development of next-generation NLWs such as: non-lethal directed energy weapons (lasers, millimeter wave and high power microwave) for counter-personnel and counter-material missions; non-lethal acoustic and optical technologies; and advanced non-lethal materials (including materials for vehicle/vessel stopping and advanced anti-traction materials). Next-generation NLW systems focus on long-range localized NL effects to identified threat individuals (or groups of individuals) and/or their threat weapons systems operating in complicated environments such as urban areas, crowds, buildings, vehicles, boats and also in close proximity to high-value civilian establishments.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2007	FY 2008	FY 2009
JOINT NON-LETHAL WEAPONS	1,400	10,736	11,020

Increase in FY 2008 funding reflects the initiation of several prototype developments and demonstration technologies involving vehicle/vessel stopping, Advanced Total Body Model, directed energy technologies for counter-personnel and counter-material application, multi-sensory stimuli candidate technologies, and technological advancements to miniaturize proven non-lethal weapon prototypes.

FY 2007 Accomplishments:

- Continued effort to assess the general utility, effect, and effectiveness of technologies for incapacitating personnel, clearing facilities, stopping vehicles and vessels, and denying enemy access to protected areas.

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PROJECT NUMBER: 3022 PROJECT TITLE: JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT

- Continued design of a man-transportable laser weapons system that can be used for non-lethal counter-personnel or non-lethal counter-material applications through ultra-high precision engagement of selected targets with minimal collateral damage.
- Continued research to define the optimum approaches, technologies and tactics necessary to clear a facility/building with and without entry.
- Continued characterization of bioeffects induced via acoustic non-lethal weapon concepts.
- Continued prototype demonstration of a muzzle-safe acoustic weapon for use in various counter-personnel/crowd control scenarios.
- Completed investigation into technology suitable for long-range, non-lethal vehicle or vessel stopping with reversible effects, and minimal collateral effects.
- Completed delivery of tabletop demonstrator.
- Initiated modeling/research to develop an understanding of the complex relationships between individual, group and crowd dynamics in order to predict the macro effects of NLWs. Specifically, investigate factors that cause crowds to move to violent behavior, and what non-lethal technologies will be effective in controlling or mitigating violent crowd behavior.
- Initiated effort to examine and optimize non-lethal effects and effectiveness of various non-lethal stimuli, to include light, acoustics, electrical, high power laser, high power microwave and active denial technology. Research includes human effects analysis with respect to existing non-lethal stimuli and other emerging system stimuli to characterize behaviors and their operational relevance.

FY 2008 Plans:

- Continue all efforts of FY 2007, less those noted as completed above.
- Initiate prototype development and demonstration of the most promising candidate technologies addressing the vehicle/vessel stopping capability gap.
- Initiate non-lethal effects characterization through modeling and effects testing using the Advanced Total Body Model.
- Initiate prototype development and demonstration of the most promising directed energy technologies under consideration for counter-personnel and counter-material applications.
- Initiate prototype development and demonstration of the most promising candidate technologies employing multi-sensory stimuli.
- Initiate investigations of technology advancements to miniaturize proven non-lethal weapon prototypes /demonstrators to enable their transition to tactically relevant, cost effective capabilities in the field.

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FY 2009 Plans:

- Continue all efforts from FY 2008.
- Complete demonstration and transition of the most effective vehicle/vessel stopping technologies to acquisition programs.
- Complete demonstration and transition of the most effective directed energy technologies with counter-personnel and counter-material applications to higher categories of development/acquisition.
- Initiate prototype development of advanced payloads for candidate technological capabilities with applications relevant to emerging capability gaps.
- Initiate prototype development and demonstration of the most promising candidate technologies addressing the extended range/duration incapacitation capability gap.

C. OTHER PROGRAM FUNDING SUMMARY - NAVY RELATED RDT&E:
PE 0602651M Joint Non-Lethal Weapons Applied Research

OTHER PROGRAM FUNDING SUMMARY - NON-NAVY RELATED RDT&E:
Not applicable

D. ACQUISITION STRATEGY:
Not applicable.