

UNCLASSIFIED

FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 02
PROGRAM ELEMENT: 0602651M
PROGRAM ELEMENT TITLE: JOINT NON-LETHAL WEAPONS APPLIED RESEARCH

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	1,880	8,910	6,036	6,043	6,043	6,043	6,043

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program funds the applied research, study, assessment, and demonstration of technologies that could provide a non-lethal capability or target effect. Investment areas include applied research related to: 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; advanced non-lethal materials (including materials for vehicle/vessel stopping and advanced anti-traction materials); associated human effects and effectiveness for new non-lethal stimuli; injury potential and effectiveness of directed energy, electric stun, ocular, and acoustic based non-lethal technologies; and developing models of crowd behavior and dynamics. This program transitioned from Program Element (PE) 0602114N, Power Projection Applied Research by order of the Under Secretary of Defense for Acquisition, Technology, and Logistics, USD(AT&L), to a separate PE for Joint Non-Lethal Weapons Applied Research and established the Marine Corps as the executive agent for DoD Joint Non-Lethal Weapons RDT&E.

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:

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2006 President's Budget Submission	1,880	6,000	6,000
Congressional Action	0	3,000	0
Congressional Undistributed Reductions/Rescissions	0	-90	0
Rate Adjustments	0	0	36
FY 2007 President's Budget Submission	1,880	8,910	6,036

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.

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COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	1,880	5,910	6,036	6,043	6,043	6,043	6,043

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds the applied research, study, assessment, and demonstration of technologies that could provide a non-lethal capability or target effect. Investment areas include applied research related to: 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; advanced non-lethal materials (including materials for vehicle/vessel stopping and advanced anti-traction materials); associated human effects and effectiveness for new non-lethal stimuli; injury potential and effectiveness of directed energy, electric stun, ocular, and acoustic based non-lethal technologies; and developing models of crowd behavior and dynamics.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	1,880	5,910	6,036

FY 2005 Accomplishments:

- Initiated examination of target effects/characterization and assessed the resulting crowd behavior and effectiveness of non-lethal acoustic and optical (light stun/distract) technologies.
- Initiated investigation of the characteristics, optimization, and control of Laser Induced Plasma (LIP) phenomena for its non-lethal applications to both counter-personnel and counter-material missions. LIP is a phenomenon of some high energy, short pulse lasers that has several potential applications to produce or transmit non-lethal stimuli.
- Initiated evaluation of advanced non-lethal material technologies, such as new anti-traction materials, for advanced non-lethal weapons.

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FY 2006 Plans:

- Continue all efforts of FY 2005.
- Continue applied research currently being performed under the Joint Non-Lethal Weapon Directorate's (JNLWD's) Non-Lethal Technology Innovation Center (NTIC). The continued mission of the NTIC is to foster the free flow of appropriate science and technology information between the JNLWD and academia, industry, military, and other government entities.
- Initiate investigation of several advanced non-lethal material technologies for advanced non-lethal weapons by including engine suffocates, morphing materials for new non-lethal rounds or flight bodies, and new non-lethal nano-materials.
- Initiate investigation of human effects associated with high-energy counter-material and counter-personnel lasers including human effects from exposure to counter-material lasers' direct and scattered radiation and laser-induced plasmas from counter-personnel lasers.
- Initiate examination of specific non-lethal effects and effectiveness associated with the laser-induced plasma phenomenon.

FY 2007 Plans:

- Continue all efforts of FY 2006.
- Initiate refinement of directed energy weapon models through research into non-lethal phenomena and assessment of human effects and weapon effectiveness.
- Initiate exploration of the use of light and sound to produce non-lethal human effects, to include saccade motion, discomfort and disability glare, flash-blindness, and potential cognitive effects, with level of light/sound stimuli below hazardous levels.
- Initiate exploration of long range, wireless, extended duration electrically induced neuromuscular incapacitation. Investigations will include the development of appropriate metrics of dose response for various levels and characteristics of electrical stimulation.
- Initiate applied research in the development of counter-personnel and counter-material directed energy non-lethal weapons, including counter-vehicle and advanced active denial activities.

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CONGRESSIONAL PLUS-UPS:

	FY 2005	FY 2006
BIOLUMINESCENCE TRUTH DATA MEASUREMENT AND SIGNATURE DETECTION	0	1,000

This effort supports bioluminescence truth data measurement and signature detection research.

	FY 2005	FY 2006
ENHANCE THE OPEN SUBMARINE MODEL	0	1,000

This effort supports research to enhance the open submarine model.

	FY 2005	FY 2006
EXTENDED CAPABILITY UNDERWATER OPTICAL IMAGING	0	1,000

This effort supports extended capability underwater optical imaging research.

C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:

PE 0603651M Joint Non-Lethal Weapons Technology Development

PE 0603851M Nonlethal Weapons

D. ACQUISITION STRATEGY:

Not applicable.