| Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy | | | | | | | | | | | Date: February 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)* | | | | | R-1 Program Element (Number/Name)<br>PE 0603651M *I JT Non-Lethal Wpns Tech Dev* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2015** | **FY 2016** | **FY 2017 Base** | **FY 2017 OCO** | **FY 2017 Total** | **FY 2018** | **FY 2019** | **FY 2020** | **FY 2021** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 0.000 | 11.163 | 12.745 | 13.117 | - | 13.117 | 13.448 | 13.387 | 13.387 | 13.387 | Continuing | Continuing |
| 3022: *Joint Non Lethal Weapons* | 0.000 | 11.163 | 12.745 | 13.117 | - | 13.117 | 13.448 | 13.387 | 13.387 | 13.387 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification**

The DOD Non-Lethal Weapons Program was established by the Office of the Secretary of Defense, which designated the Commandant of the Marine Corps (CMC) as the DoD NLW Executive Agent (EA). The EA exercises centralized responsibility for joint research and development of non-lethal weapons and technology through the Joint Non-Lethal Weapons Program (JNLWP). The Office of 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 Non-Lethal Weapons (NLW) Integrated Product Team, a multi-service flag level corporate board that provides executive oversight and management for the JNLWP for the CMC. 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 Based Assessment Document. This coordinated joint S&T development approach addresses mutual capability gaps and assures the best non-lethal technologies, capabilities and equipment are provided to the operating forces while eliminating duplicative service S&T investment. These advanced technology development initiatives feed non-lethal capabilities which directly support the three pillars of the 2014 Quadrennial Defense Review and comprise a fundamental part of DoD's security cooperation efforts to build partner capacity. The resulting capabilities will facilitate a fully integrated non-lethal competency as a complement to lethal firepower, providing force application options for short-of-lethal scenarios.

This program funds Advanced Technology Development of next-generation non-lethal capabilities and includes performing analysis, technology development efforts, and modeling and simulation necessary to ensure optimum weaponization and use of these capabilities. 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-materiel missions; non-lethal counter-personnel technologies (acoustic, optical, and human electro-muscular disruption technologies), and advanced non-lethal materials (including materials for vehicle/vessel stopping and counter-facility applications). Next-generation non-lethal systems focus on long-range localized non-lethal 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, vessels, and also in close proximity to high-value civilian facilities.

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

| Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy | | | | | Date: February 2016 |
|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)* | | | R-1 Program Element (Number/Name)<br>PE 0603651M *I JT Non-Lethal Wpns Tech Dev* | | |
| **B. Program Change Summary ($ in Millions)** | **FY 2015** | **FY 2016** | **FY 2017 Base** | **FY 2017 OCO** | **FY 2017 Total** |
| Previous President's Budget | 11.498 | 12.745 | 13.117 | - | 13.117 |
| Current President's Budget | 11.163 | 12.745 | 13.117 | - | 13.117 |
| Total Adjustments | -0.335 | 0.000 | 0.000 | - | 0.000 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -0.335 | 0.000 | | | |

**Change Summary Explanation**

Technical: Not applicable.

Schedule: Not applicable.

| Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy | | | Date: February 2016 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 3 | R-1 Program Element (Number/Name)<br>PE 0603651M / *JT Non-Lethal Wpns Tech Dev* | Project (Number/Name)<br>3022 / *Joint Non Lethal Weapons* | |

| COST ($ in Millions) | Prior Years | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total | FY 2018 | FY 2019 | FY 2020 | FY 2021 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3022: *Joint Non Lethal Weapons* | 0.000 | 11.163 | 12.745 | 13.117 | - | 13.117 | 13.448 | 13.387 | 13.387 | 13.387 | Continuing | Continuing |

**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 weaponization 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-materiel missions; non-lethal counter-personnel technologies (acoustic, optical, and human electro-muscular disruption technologies), and advanced non-lethal materiels (including materiels for vehicle/ vessel stopping and counter-facility applications). 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, vessels, and also in close proximity to high-value civilian facilities.

The FY2015 to FY2016 increase in funding in the Joint Non-Lethal Weapons Technology Development PE is due the initiation of prototype development, demonstration, and transition to higher levels of technology development of the most promising candidate technologies addressing the extended range/duration incapacitation capability gap.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total |
|---|---|---|---|---|---|
| ***Title:*** JOINT NON-LETHAL WEAPONS | 11.163 | 12.745 | 13.117 | 0.000 | 13.117 |
| ***FY 2015 Accomplishments:***<br>- 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.<br>- Continued prototype development and transition to higher levels of technology development of advanced payloads for candidate technological capabilities with applications relevant to emerging capability gaps.<br>- Continued transition to higher levels of development and demonstration for the most promising candidate technologies employing multisensory stimuli.<br>- Continued transition to higher levels of technology development and demonstrate the most promising directed energy technologies under consideration for counter-personnel and counter-materiel applications.<br>- Continued non-lethal effects characterization through modeling and effects testing for joint advanced technology development using Human Effects Modeling Analysis Program (HEMAP).<br>- Continued evaluation of alternative non-lethal prototype technologies offering operational utility and transition best candidates to higher levels of technology development and acquisition.<br>- Continued advanced prototype development and demonstration of a smaller, lighter active denial technology demonstrator based on the most promising and mature 95 GHz source technology. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy | | Date: February 2016 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 3 | **R-1 Program Element (Number/Name)**<br>PE 0603651M / *JT Non-Lethal Wpns Tech Dev* | **Project (Number/Name)**<br>3022 / *Joint Non Lethal Weapons* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total |
|---|---|---|---|---|---|
| - Continued incorporation of suitable sensors capable of measuring NL stimuli into surrogate test models as part of the HEMAP.<br>- Continued prototype development, demonstration and transition to higher levels of technology development of the most promising candidate technologies addressing the extended range/duration incapacitation capability gap.<br>- Completed research to define and transition to higher levels of technology development the optimum approaches, technologies and tactics necessary to clear a facility/building with and without entry.<br>- Completed addressing non-lethal counter-personnel capability gaps with alternative directed energy technologies.<br>- Completed technology development employing optimized electro-muscular disruption waveforms and mechanisms for an extended duration counter-personnel suppression capability.<br>- Completed advanced system component research and development for integration into NLE systems (vehicle stopping, vessel stopping, and counter personnel systems).<br>- Initiated modular prototyping of High Power Microwave (HPM) component hardware meeting development objectives for subsequent integration into an HPM-capable system configuration.<br>***FY 2016 Plans:***<br>- Continue all efforts from 2015, except those noted as completed.<br>***FY 2017 Base Plans:***<br>- Continue all efforts from 2016, except those noted as completed.<br>- Complete advanced prototype development and demonstration of a smaller, lighter active denial technology demonstrator based on the most promising and mature 95 GHz source technology.<br>- Initiate development of technologies to deliver emerging novel counter-materiel and counter-personnel payloads to target while minimizing risk to the operator.<br>- Initiate development of a laboratory/benchtop High-Power Radio-Frequency (HPRF) directed energy system to validate short pulse counter-materiel effects. Refine, integrate and demonstrate breadboard system.<br>***FY 2017 OCO Plans:***<br>N/A | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 11.163 | 12.745 | 13.117 | 0.000 | 13.117 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

| Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy | | Date: February 2016 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 3 | **R-1 Program Element (Number/Name)**<br>PE 0603651M / *JT Non-Lethal Wpns Tech Dev* | **Project (Number/Name)**<br>3022 / *Joint Non Lethal Weapons* |

**C. Other Program Funding Summary ($ in Millions)**

**Remarks**

**D. Acquisition Strategy**

N/A

**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 which address identified and prioritized joint NLW capability gaps. The program consists of a collection of projects for 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, mitigation of high priority joint NLW capability gaps, 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.

THIS PAGE INTENTIONALLY LEFT BLANK