Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603651M *I JT Non-Lethal Wpns Tech Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	0.000	12.790	13.448	13.313	-	13.313	13.307	13.301	13.564	13.840	Continuing	Continuing
3022: *Joint Non Lethal Weapons*	0.000	12.790	13.448	13.313	-	13.313	13.307	13.301	13.564	13.840	Continuing	Continuing

A. Mission Description and Budget Item Justification

The DOD Non-Lethal Weapons (NLW) 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 (AT&L) 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 2019 Navy					Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*			R-1 Program Element (Number/Name) PE 0603651M *I JT Non-Lethal Wpns Tech Dev*		
B. Program Change Summary ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Previous President's Budget	13.117	13.448	13.387	-	13.387
Current President's Budget	12.790	13.448	13.313	-	13.313
Total Adjustments	-0.327	0.000	-0.074	-	-0.074
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.319	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.074	-	-0.074
• Congressional General Reductions Adjustments	-0.008	-	-	-	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 3	R-1 Program Element (Number/Name) PE 0603651M / *JT Non-Lethal Wpns Tech Dev*	Project (Number/Name) 3022 / *Joint Non Lethal Weapons*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3022: *Joint Non Lethal Weapons*	0.000	12.790	13.448	13.313	-	13.313	13.307	13.301	13.564	13.840	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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: JOINT NON-LETHAL WEAPONS	12.790	13.448	13.313	0.000	13.313
FY 2018 Plans: - 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. - 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. - 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. - Continued non-lethal effects characterization through modeling and effects testing for joint advanced technology development using Human Effects Modeling Analysis Program (HEMAP). - Continued evaluation of alternative non-lethal prototype technologies offering operational utility and transition best candidates to higher levels of technology development and acquisition. - 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. - 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. - Continued modular prototyping of High Power Microwave (HPM) component hardware meeting development objectives for subsequent integration into an HPM-capable system configuration.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603651M / *JT Non-Lethal Wpns Tech Dev*	**Project (Number/Name)** 3022 / *Joint Non Lethal Weapons*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Continued development of technologies to deliver emerging novel counter-materiel and counter-personnel payloads to target while minimizing risk to the operator. - Continued 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. ***FY 2019 Base Plans:*** Continue the development, integration, and demonstration of advanced technologies and payloads capable of addressing non-lethal counter-personnel and counter-material capability gaps while minimizing risk to the operator. Development efforts include the prototyping of advanced payloads, delivery systems, alternative technologies, and high power microwave component hardware and modular systems for non-lethal vehicle and vessel stopping applications. Development and integration of advanced millimeter wave component technologies for counter-personnel directed energy effects will continue in order to reduce system size, increase energy efficiency, and improve performance. Human effects modeling and analysis efforts will incorporate knowledge gained from applied research studies into a suite of programs and surrogates that enable assessment and prediction of injury risk and effectiveness for NLW stimuli. Transition prototype technologies offering operational utility to higher levels of technology development and acquisition. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** There is no significant change from FY 2018 to FY 2019.					
Accomplishments/Planned Programs Subtotals	12.790	13.448	13.313	0.000	13.313

C. Other Program Funding Summary ($ in Millions)

N/A

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

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603651M / *JT Non-Lethal Wpns Tech Dev*	**Project (Number/Name)** 3022 / *Joint Non Lethal Weapons*

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.