Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy	Date: March 2024
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 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	0.000	13.694	15.556	16.188	-	16.188	16.950	17.855	18.212	18.594	Continuing	Continuing
3022: *Joint Non Lethal Weapons*	0.000	13.694	15.556	16.188	-	16.188	16.950	17.855	18.212	18.594	Continuing	Continuing

A. Mission Description and Budget Item Justification

The DoD Non-Lethal Weapons Program was established by the FY96 National Defense Authorization Act. The Office of the Secretary of Defense 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 and Sustainment (A&S) serves as the OSD Principal Staff Assistant and oversees, in consultation with the Under Secretary of Defense for Policy and the DoD NLW Executive Agent. The efforts described in this Program Element (PE) reflect science and technology (S&T) investment decisions 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 requirements and capabilities sought by the Services 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 most relevant 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 National Defense Strategy (NDS) objective of strategic competition by providing options to the Joint Force in pursuit of national objectives in legal or policy constrained scenarios, as well as complementing the use of lethal effects in complex combat scenarios, for example, in urban environments with large civilian populations. Ongoing NLW studies, analyses and exercise efforts with North Atlantic Treaty Organization (NATO) and Allies also support NDS objectives to strengthen alliances and partnerships. Resulting capabilities will facilitate a fully integrated non-lethal competency as a complement to lethal firepower, providing force application options for below lethal threshold engagements. 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 NLW Intermediate Force Capabilities (IFCs) 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.

This Program Element (PE) funds Advanced Technology Development (ATD) that includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. Efforts in this PE generally have Technology Readiness Levels TRL) of 4 (component and/or breadboard validation in laboratory environment.), 5 (component and/or breadboard validation in relevant environment.), or 6 (system/subsystem model or prototype demonstration in a relevant environment).

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 ($ in Millions)	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**
Previous President's Budget	14.048	15.556	16.967	-	16.967
Current President's Budget	13.694	15.556	16.188	-	16.188
Total Adjustments	-0.354	0.000	-0.779	-	-0.779
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.354	0.000			
• Program Adjustments	0.000	0.000	-0.779	-	-0.779
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Funding: No significant change.

Technical: No significant change.

Schedule: No significant change

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy											Date: March 2024	
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 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
3022: *Joint Non Lethal Weapons*	0.000	13.694	15.556	16.188	-	16.188	16.950	17.855	18.212	18.594	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds the research and development of next-generation Non-Lethal Weapons and includes performing analysis, technical development efforts, and modeling and simulation necessary to ensure optimum weaponization and use of these NLW. Investment areas include research and development of next-generation Non-Lethal Weapons (NLW) 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 Weapons 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**
Title: Joint Non-Lethal Weapons	13.694	15.556	16.188	0.000	16.188
Articles:	-	-	-	-	-
FY 2024 Plans: Continue: - Research and investigation of Non-Lethal Weapons (NLWs) and Intermediate Force Capability (IFC) effects and emergent technologies with the potential to further address the Joint Requirements Oversight Council (JROC) approved nonlethal counter-personnel and counter-materiel capability gaps. Specifically, explore new non-lethal effects and evaluate alternative innovative applications of existing technologies to address future non-lethal capability needs as escalation of force platforms. Examples of counter personnel research include further optimization of non-lethal human effects, and enhanced understanding of human target behavioral effects. - Characterize non-lethal phenomena and to assess target human effects and weapon effectiveness, including the development of dose response and injury correlates for new Non-Lethal Weapons technologies. - Assess and study of new technologies to NLW effectiveness and behavioral response, such as advancing the understanding of Flash Bang effects on humans to support novel non-explosive alternatives to pyrotechnic non-lethal IFC devices.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
- Counter-materiel research to include the investigation of novel intermediate force capabilities for increased delivery and employment options; for applications such as vehicle and vessel stopping and the further optimization of intermediate force materials for integration into future escalation of force platforms. - Perform feasibility and design studies for high peak power radio frequency directed energy sources and other high power microwave directed energy technologies (e.g., lasers, millimeter-waves) with extended range applications and longer duration of effect. - Investigation and conceptual design of high power microwave technologies to enable improved performance and reduce overall size, weight, power consumption, thermal cooling requirements, and overall system costs (SWaP-C). Results will support the transition of viable technologies to higher levels of development and demonstration. - Integrate various human effects(HE) dose response studies into a generalized repel and thermodynamic model of relevant human effects that are safe for operational engagements with Non-lethal Weapon (NLWs) and Intermediate Force Capabilities (IFCs). - Prototype multiple long-range adaptive hardware and software systems; to validate Non-lethal Weapon (NLW) and Intermediate Force Capability (IFC) Directed Energy (DE) emissions are safely aimed on human targets. - Subsystem and component design and development of high peak-power, both for wide-band and for narrow-band Radio Frequencies (RFs), in support of longer range and more compact Non-Lethal Weapon (NLW) and Intermediate Force Capability (IFC) DE effects.					
FY 2025 Base Plans: - Continue research and investigation of Non-Lethal Weapons (NLWs) and Intermediate Force Capability (IFC) effects and emergent technologies with the potential to further address the Joint Requirements Oversight Council (JROC) approved nonlethal counter-personnel and counter-materiel capability gaps. Specifically, explore new non-lethal effects and evaluate alternative innovative applications of existing technologies to address future non-lethal capability needs as escalation of force platforms. Examples of counter personnel research include further optimization of non-lethal human effects, and enhanced understanding of human target behavioral effects. - Continue to characterize non-lethal phenomena and to assess target human effects and weapons effectiveness, including the development of dose response and injury correlates for new Non-Lethal Weapons technologies. - Continue to assess and study of new technologies to NLW effectiveness and behavioral response, such as advancing the understanding of Flash Bang effects on humans to support novel non-explosive alternatives to pyrotechnic non-lethal IFC devices.					

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
- Continue Counter-materiel research to include the investigation of novel intermediate force capabilities for increased delivery and employment options; for applications such as vehicle and vessel stopping and the further optimization of intermediate force materials for integration into future escalation of force platforms. - Continue to perform feasibility and design studies for high peak power radio frequency directed energy sources and other high-power microwave directed energy technologies (e.g., lasers, millimeter-waves) with extended range applications and longer duration of effect. - Continue to investigation and conceptual design of high-power microwave technologies to enable improved performance and reduce overall size, weight, power consumption, thermal cooling requirements, and overall system costs (SWaP-C). Results will support the transition of viable technologies to higher levels of development and demonstration. - Continue to integrate various human effects (HE) dose response studies into a generalized repel and thermodynamic model of relevant human effects that are safe for operational engagements with Non-lethal Weapons (NLW) and Intermediate Force Capabilities (IFCs). - Continue to prototype multiple long-range adaptive hardware and software systems; to validate Non-lethal Weapons (NLW) and Intermediate Force Capability (IFC) Directed Energy (DE) emissions are safely aimed on human targets. - Continue Subsystem and component design and development of high peak-power, both for wide-band and for narrow-band Radio Frequencies (RFs), in support of longer range and more compact Non-Lethal Weapons (NLW) and Intermediate Force Capability (IFC) DE effects. ***FY 2025 OCO Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** The increase in funding from FY 2024 to FY 2025 supports the development and initial evaluation of a brass board prototype which will enable the assessment of high peak power waveforms, in both narrowband and wideband regimes, through experimentation. This assessment will ultimately determine the suitability of this technological approach for application to a next generation, advanced compact vessel stopping capability.					
Accomplishments/Planned Programs Subtotals	13.694	15.556	16.188	0.000	16.188

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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D. Acquisition Strategy

N/A