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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Office of the Secretary Of Defense **Date:** March 2024

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603225D8Z I <i>Joint DoD-DoE Munitions Technology Development</i>
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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	-	18.291	19.567	19.826	-	19.826	20.265	20.687	21.121	21.543	Continuing	Continuing
225: <i>Joint DOD DOE Munitions</i>	-	18.291	19.567	19.826	-	19.826	20.265	20.687	21.121	21.543	Continuing	Continuing

**Note**

New Start (Y/N): N

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

This program supports the Department's initiatives to Deter Aggression, Prevail in Conflict, Defend the Homeland, and Build Sustainable and Long-Term Advantages.

The mission of the Joint DoD/DOE Munitions Technology Development Program (JMP) is to develop new and innovative science and technology (S&T) to enable significant advancements in the state-of-the-art for conventional munitions. The JMP portfolio comprises essential, cross-cutting, and foundational S&T investments that enable future force operational capabilities in the near, mid, and far term.

A memorandum of understanding between the Department of Defense and the Department of Energy provides the basis for the cooperative effort and for cost sharing the mutually beneficial technology advancements. The funding budgeted by the DoD to this program are matched, at a minimum, dollar for dollar by the DOE. Through this interdepartmental cooperation, the DoD leverages DOE's substantial investments in intellectual capital, highly specialized skills, advanced scientific equipment and facilities, and computational tools not available within the DoD. The integration of DOE technologies with DoD Joint Services' needs has provided major advances in munition capabilities over many years and continues to play a crucial role in the exploration, development, and transition of new technologies needed by the services.

The JMP has established a successful collaborative community of DoD and DOE scientists and engineers that develop technologies of interest to both Departments. A structured cadence of threat informed requirements development, Joint Service informed portfolio development, and bi-annual technical reviews ensure that the JMP's investments address high-priority DoD gaps, needs, and challenges. The JMP portfolio is organized into four Technology Coordination Groups (TCG), led by DoD Service laboratory subject matter experts, which evaluate each project's technical progress and continued relevance to the mission.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	17.279	19.567	19.985	-	19.985
Current President's Budget	18.291	19.567	19.826	-	19.826
Total Adjustments	1.012	0.000	-0.159	-	-0.159
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.619	-			
• SBIR/STTR Transfer	-0.605	-			
• Program Adjustments	-0.002	-	-0.200	-	-0.200
• Economic Adjustments	-	-	0.041	-	0.041

**Change Summary Explanation**

A reduction of \$0.200 million in FY 2025 was applied to meet DoD overall funding reductions, which were spread to mitigate impact. Funding increase of \$0.041 million in FY 2025 for Economic Assumptions.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Office of the Secretary Of Defense										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 0400 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603225D8Z / Joint DoD-DoE Munitions Technology Development				<b>Project (Number/Name)</b> 225 / Joint DOD DOE Munitions			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
225: Joint DOD DOE Munitions	-	18.291	19.567	19.826	-	19.826	20.265	20.687	21.121	21.543	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The mission of the Joint DoD/DOE Munitions Technology Development Program (JMP) is to develop new and innovative science and technology (S&T) to enable significant advancements in the state-of-the-art for conventional munitions. The JMP portfolio comprises essential, cross-cutting, and foundational S&T investments that enable future force operational capabilities in the near, mid, and far term.

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**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> Joint DoD/DOE Munitions Technology Development	18.291	19.567	19.826
<p><b>Description:</b> Joint DoD/DOE Munitions Technology Development focuses on the following key areas:</p> <ul style="list-style-type: none"> <li>- Decision tools, diagnostics, and datasets for munition design and evaluation</li> <li>- Munition delivery technology enabling advanced weapon bodies, propulsion systems, and extreme environment survivability</li> <li>- Munition controls for fuzing, microelectronics, power, sensors, kill chains, and survivable components</li> <li>- Lethal effects innovations enabling novel explosive materials, formulations, warhead designs, and target damage advancements</li> </ul>			
<p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>• Develop weaponeering and decision tools for assessment of target interaction effects to enhance lethality modeling codes.</li> <li>• Develop novel imaging methods and models of high explosive fracture behavior to enable lighter munitions and increased range and speed.</li> </ul>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<ul style="list-style-type: none"> <li>• Develop reactive flow models to enable warhead geometries necessary for miniature swarming munitions and extreme environment applications.</li> <li>• Demonstrate a numerical integration methodology for hydrocodes to reduce the computational cost and schedule of munition simulations by &gt;20X for designers and weaponeers.</li> </ul> <p><b><i>FY 2025 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Develop high fidelity simulations of combined effects explosive (CEX) warheads using recently validated main charge reactive burn models.</li> <li>• Develop macroscale reduced-order failure model for metals with documentation for transition to DoD.</li> <li>• Develop and evaluate prototype low temperature-compatible supercapacitor technology with 10x energy density over the state-of-the-art.</li> <li>• Demonstrate a new modeling and simulation capability for ship defeat in support of maritime lethality efforts.</li> <li>• Demonstrate capability to measure surface chemistry of thermal protection system (TPS) materials in hot, hypersonic flow representative of the aerodynamic shear and extreme heating rates found in hypersonic flight.</li> <li>• Demonstrate a suit of machine learning algorithms for a counter-unmanned aircraft system (CUAS) platform capable of autonomous detection, classification, tracking, and intercept of next generation UAS threats.</li> <li>• Deliver next generation shock-hydro-structure modeling and simulation (M&amp;S) capability enabling blast loading of structures with complex internal components, blast induced material failure, and munition response during impact and penetration events.</li> </ul> <p><b><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i></b> The increase of \$0.259 million between FY 2024 and FY 2025 supports the continued development of decision tools and models to improve or enhance munitions.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	18.291	19.567	19.826

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**  
N/A