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

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602000D8Z I <i>Joint Munitions Technology</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	-	22.665	19.157	19.373	-	19.373	19.792	20.206	20.645	21.056	Continuing	Continuing
076: <i>Enhanced Munitions</i>	-	22.665	19.157	5.812	-	5.812	5.937	6.062	6.194	6.317	Continuing	Continuing
355: <i>Energetics Technology</i>	-	0.000	0.000	13.561	-	13.561	13.855	14.144	14.451	14.739	Continuing	Continuing

Note
 New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to build sustainable and long-term technology advantages to solve operational and mission-focused challenges.

The Joint Enhanced Munitions Technology Program (JEMTP), within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) was established to develop and demonstrate joint munitions enhancing technologies (energetics, warheads, propulsion systems, advanced lethality mechanisms, fuzes and fuze components, and target detection to provide future kinetic fires capabilities to ensure advantage for U.S. warfighters. The program's plans and investments are informed by threat-opportunity based analyses from Joint Force campaign scenarios. The JEMTP activities within Program Element 0602000D8Z are executed under two Project Codes: 076 - Enhanced Munitions and 355 – Energetics Technologies.

Project Code 076 - The Enhanced Munitions Project continues focus on technology investments on novel fuzing, power sources, target detection sensing technologies, and counter-countermeasure technologies that are vital to combine with Energetics Technologies Project investments to enhance future munitions range/speed, lethality and survivability.

Project Code 355 - In FY 2025, the program will execute the Energetics Technology project to focus on investigation and research of energetic materials (ingredients and formulations) with the goals of enhancing munitions capability and addressing supply chain resilience. The Energetics Technology Project will collaborate with DoD and Services to develop and execute strategies and roadmaps for advanced energetics to conduct energetics material synthesis and formulation development; to accelerate the application and transition of advanced energetics materials into DoD munitions and the energetics manufacturing base; and to apply modern, agile energetics processing and manufacturing technologies.

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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	22.961	19.157	19.530	-	19.530
Current President's Budget	22.665	19.157	19.373	-	19.373
Total Adjustments	-0.296	0.000	-0.157	-	-0.157
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.294	-			
• Program Adjustments	-0.002	-	-0.196	-	-0.196
• Economic Assumptions	-	-	0.039	-	0.039

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 076: *Enhanced Munitions*

Congressional Add: *Next Generation Explosives and Propellants*

Congressional Add: *Energetics Manufacturing Technology*

Congressional Add Subtotals for Project: 076

Congressional Add Totals for all Projects

	FY 2023	FY 2024
	2.000	-
	2.000	-
	4.000	-
	4.000	-

Change Summary Explanation

The decrease of \$0.196 million between FY 2024 and FY 2025 was applied to meet DoD overall funding reductions, which were spread to mitigate impact. Funding increase of \$0.039 million in FY 2025 for Economic Assumptions.

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Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602000D8Z / Joint Munitions Technology				Project (Number/Name) 076 / Enhanced Munitions			
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
076: Enhanced Munitions	-	22.665	19.157	5.812	-	5.812	5.937	6.062	6.194	6.317	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Enhanced Munitions project investigates and develops cross-cutting enabling munitions technologies that are broadly applicable across service munitions. The project invests in enabling technologies in sensors, propulsion, warhead, and fuzing to demonstrate enhanced performance in future munitions.

In FY 2025 the Enhanced Munitions project continues to address other critical munitions technologies outside of advanced energetics that enable the Energetics Technology project investments to be effectively incorporated into munitions systems. Lethality increases are not only dependent on advanced energetics, but also optimized munitions placement and burst point optimization. Munitions investments in survivability against harsh environments and adversarial countermeasures are necessary to allow the munition to reach and prosecute its intended target.

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

Title: Enhanced Munitions	FY 2023	FY 2024	FY 2025
<p>Description: Project investments are derived from the operationally informed, Department of Defense Munitions S&T Strategic Priorities, focused on developing enabling technologies to enhance warhead lethality, propulsion performance, target detection and burst point control, and weapon survivability. Technologies under investigation applies machine learning and artificial intelligence for sensing and target recognition, bio-manufacturing of energetic ingredients and advanced energetic materials, and compositions that enable the next generation of kinetic weapons capabilities.</p> <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Complete rotating detonation engine enabling technology research through static firing test and transition this long range propulsion technology into advanced development. - Develop advanced propulsion solid fuels, thrust control technologies, variable nozzle technologies that will enhance U.S. missile range, speed and maneuverability. - Continue development of machine learning based target detection technologies to enhance lethality with focus on maritime targets. - Investigate advanced munitions energetics and non-energetics materials using novel and agile processing technologies for enhanced performance and survivability future weapons. - Improve energetic materials production and processing technologies to bolster supply chain and diversify energetic systems industrial base. <p>FY 2025 Plans:</p>	18.665	19.157	5.812

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<ul style="list-style-type: none"> - Conduct development of Fast-Running Blast-on-Structure Lethality Models that reduce the uncertainty of lethality assessments and thus reduce over allocation of munitions in DoD weaponeering tools. - Complete testing of machine learning based target detection device to enhance missile lethality against maritime targets. - Conduct flight testing of dynamic trigger fuzing that optimizes warhead detonation point to optimize target defeat lethality. <p>FY 2024 to FY 2025 Increase/Decrease Statement: The decrease of \$13.345 million between FY 2024 and FY 2025 reflects a realignment to the Energetics Technology Project Code 355 to focus on accelerating advanced energetics development.</p>			
Accomplishments/Planned Programs Subtotals	18.665	19.157	5.812

	FY 2023	FY 2024
<p>Congressional Add: Next Generation Explosives and Propellants</p> <p>FY 2023 Accomplishments: The Next Generation Explosives and Propellants project increase develops advanced energetic ingredients and consolidation methods at Virginia Polytechnic Institute & State University (Virginia Tech).</p>	2.000	-
<p>Congressional Add: Energetics Manufacturing Technology</p> <p>FY 2023 Accomplishments: The energetics manufacturing technology program increase will focus on maturing advanced manufacturing concepts that enable improvements in energetics manufacturing quality and capacity to bolster supply chain and diversify energetic systems industrial base and ultimately develop munitions with increase range and performance.</p>	2.000	-
Congressional Adds Subtotals	4.000	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

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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
355: Energetics Technology	-	0.000	0.000	13.561	-	13.561	13.855	14.144	14.451	14.739	Continuing	Continuing

A. Mission Description and Budget Item Justification

U.S. weapons systems still largely rely on decades-old explosive and propellant technologies that limit Joint Force options to deter, and if necessary, defeat adversaries in conflict. The Energetics Technology project is established to expedite investigation, research, and transition of novel energetics materials, chemicals, and processes that will enable improvements in existing and future munitions performance. The investments and efforts will enable modern manufacturing processing and help to bolster U.S. energetics supply chain resiliency. The Joint Enhanced Munitions Technology Program (JEMTP), Services, and Office of the Under Secretary of Defense (OUSD) munitions stakeholder community will collaborate to generate technology roadmaps for advanced energetic research, development, including CL-20 compounds.

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

	FY 2023	FY 2024	FY 2025
Title: Energetics Technology	-	-	13.561
Description: Energetics Technology project investments are focused on advanced energetics ingredient development and formulation research focused on improving munitions propulsion and warhead performance. The project will leverage the energetics systems Public- Private-Partnership (PPP) Energetics Partnership Intermediary Consortium (EPIC) to facilitate and accelerate munitions technology development, demonstration, and transition.			
Technology efforts include energetics development for high efficiency propellants, high performance explosives (e.g. enhanced blast, fragmentation, penetration, and underwater effects); using efficient, flexible, and adaptable processes; applying bio-technology developed critical energetics chemicals. Funded efforts are driven by program office, service, and operational needs as outlined and planned within the DoD Munitions S&T Strategic Priorities and cross-cutting technology gaps identified in advanced energetics roadmaps.			
FY 2025 Plans: Continue and expand development of advanced energetics for enhanced munition capability and improved industrial base capacity through novel processes and formulations through the following activities: - Develop advanced underwater explosive formulation (UNDEX) and validate performance using optimized modeling and small-scale experimentation methodologies. - Develop high performance advanced energetics formulations, including CL-20 for high performance propellants and explosives. - Develop novel synthesized energetics materials required for advanced formulations. - Develop advanced energetics materials using bio-technology and bio-industry derived sources.			
FY 2024 to FY 2025 Increase/Decrease Statement:			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
The increase of \$13.561 million between FY 2024 and FY 2025 reflects a realignment from the Enhanced Munitions project to place emphasis on research, testing and transition of energetics enabling technologies for munitions.			
Accomplishments/Planned Programs Subtotals	-	-	13.561

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

N/A

Remarks

D. Acquisition Strategy

N/A