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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Army **Date:** March 2024

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems Integration</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	-	117.723	12.904	13.031	-	13.031	13.042	13.181	13.324	13.457	0.000	196.662
TR5: <i>Missile Defense Battlelab</i>	-	117.723	12.904	13.031	-	13.031	13.042	13.181	13.324	13.457	0.000	196.662

A. Mission Description and Budget Item Justification

This Program Element (PE) funds missile defense systems integration efforts for the US Army Space and Missile Defense Command in its role as the Army Service Component Command (ASCC) to USSTRATCOM and USSPACECOM.

USASMDC: Headquarters, Department of the Army General Order 37, dated 16 October 2006, designated USASMDC as the Army proponent for ground-based midcourse defense (GMD), the Army integrator for global missile defense, and the ASCC of the U.S. Strategic Command (USSTRATCOM). Upon its establishment, USASMDC became the Army Service Component Command of the United States Space Command (USSPACECOM). Army Regulation (AR) 10-87 Army Commands, Army Service Component Commands, and Direct Reporting Units dated 4 September 2007, and AR 5-22 The Army Force Modernization Proponent System dated 19 August 2009 designate USASMDC as the Army specified proponent for Global Missile Defense (GMD) capabilities. As the Army proponent for GMD, USASMDC is responsible for developing warfighting concepts, conducting warfighting experiments to validate those concepts, identifying capabilities needed to implement the validated concepts, and developing Doctrine, Organizations, Training, Material, Leadership & Education, Personnel, Facilities and Policy (DOTMLPF-P) solutions to realize GMD capabilities. As the Army integrator for global missile defense, USASMDC is responsible for reviewing programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM and USSPACECOM to execute their global missile defense responsibilities to provide protection of the homeland and regional/theater missile defense.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	118.001	12.904	13.010	-	13.010
Current President's Budget	117.723	12.904	13.031	-	13.031
Total Adjustments	-0.278	0.000	0.021	-	0.021
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.157	-			
• SBIR/STTR Transfer	-0.121	-			
• Adjustments to Budget Years	-	-	0.021	-	0.021

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

Project: TR5: *Missile Defense Battlelab*

FY 2023	FY 2024

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

	FY 2023	FY 2024
Congressional Add: <i>Program increase - integrated environmental control and power</i>	16.000	-
Congressional Add: <i>A2IFS (Advanced Dynamic and Features Simulation)</i>	20.000	-
Congressional Add: <i>System Engineering Research into System Integration Air and Missile</i>	10.000	-
Congressional Add: <i>Mobile Solid State High Power Microwave</i>	25.000	-
Congressional Add: <i>Pragmatic Artificial Intelligence and New Technology</i>	15.000	-
Congressional Add: <i>Gun Launched Interceptors (GLI)</i>	3.000	-
Congressional Add: <i>Sensing, Modeling, Analysis, Requirements, and Training (SMART)</i>	10.000	-
Congressional Add: <i>Weather Impacts Tool Kit (WITK)</i>	5.000	-
Congressional Add: <i>AI/ML for Integrated Fires (AIF)</i>	2.000	-
Congressional Add Subtotals for Project: TR5	106.000	-
Congressional Add Totals for all Projects	106.000	-

Change Summary Explanation

Minor increase in FY25 funding from the previous PB to the current PB due to revised economic assumptions.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army **Date:** March 2024

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab
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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
TR5: <i>Missile Defense Battlelab</i>	-	117.723	12.904	13.031	-	13.031	13.042	13.181	13.324	13.457	0.000	196.662
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project TR5 funds the Strategic Missile Defense (SMD) Force Development activities of the United States Army Space and Missile Defense Command (USASMDC) Space and Missile Defense Center of Excellence (SMDCoE). The SMDCoE is the warfighting function lead and Department of the Army force modernization proponent to develop the associated operational prototyping, experimentation, operational analysis, and modeling and simulation in support of missile defense capabilities for current and future Forces. The SMDCoE SMD Force Development workforce supports the research and doctrine development from one of the SMDCoE principal locations in Huntsville, AL; Colorado Springs, CO; and Joint Base Langley-Eustis. As the Army proponent for SMD, USASMDC is responsible for developing warfighting concepts, conducting warfighting experiments to validate those concepts, identifying capabilities needed to implement the validated concepts, and developing Doctrine, Organizations, Training, Material, Leadership & Education, Personnel, Facilities and Policy (DOTMLPF-P) solutions to develop future SMD capabilities. As the Army integrator for SMD, USASMDC is responsible for reviewing programs managed by the Army, other Services, Defense agencies and National agencies to ensure that they are correctly synchronized and will ultimately provide the capabilities required by USSTRATCOM and USSPACECOM to execute their SMD responsibilities.

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

	FY 2023	FY 2024	FY 2025
Title: Disruptive Concepts and Technologies Development	7.436	8.156	8.270
Description: Provide concept development / DOTMLPF-P support to the Army Air and Missile Defense Cross Functional Team (AMD CFT) for priority programs.			
FY 2024 Plans: Mature operating concepts leveraging advanced technologies to include Artificial Intelligence Air and Missile Defense (AIAMD), enduring Indirect Fires Protection Capability (IFPC) and laser technology air and missile defense protection systems. Develop concepts to integrate emerging technologies supporting the development of next generation capabilities to match, then outpace the threat in order to ensure success in competition, crisis, conflict, and change.			
FY 2025 Plans: SMDCoE maintains focus on developing concepts to integrate emerging technologies which support the development of next generation capabilities to match, then outpace the threat in order to ensure success in competition, crisis, conflict, and change.			
FY 2024 to FY 2025 Increase/Decrease Statement: Increase due to economic assumptions.			
Title: Strategic Missile Defense Experiments, Wargames and Prototypes	1.715	1.876	1.876

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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems Integration</i>	Project (Number/Name) TR5 / <i>Missile Defense Battlelab</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
<p>Description: Develop and assess current SMD technologies and assess capabilities through participation in wargames and experiments.</p> <p>FY 2024 Plans: USASMDC SMDCoE will continue to pursue Army modernization priorities through participation in the Joint Warfighting Concept and support to combatant command wargaming, experimentation and concept development.</p> <p>FY 2025 Plans: USASMDC SMDCoE develops and tests concepts to improve pre-launch awareness of mobile launched hypersonic weapons, to modernize the ability to track hypersonic weapons, and develop a more integrated and coordinated global missile defense command and control network.</p>				
<p>Title: Strategic Missile Defense Models and Simulations Infrastructure</p> <p>Description: USASMDC is the proponent for multiple models and simulations (M&S) critical to the Army and Joint analysis, exercise, wargaming, and experimentation communities.</p> <p>FY 2024 Plans: Continue improve Missile Defense analysis, advanced modelling and simulations by leveraging lessons learned from previous efforts. Evaluate new technologies in realistic operating environments to accurately reflect modern missile defense capabilities. Develop the Future Force Experimentation Air Defense System (FFEADS) simulation model to provide operator-in-the-loop representations of all Army air and missile defense weapon, and command and control systems.</p> <p>FY 2025 Plans: Conduct and improve Missile Defense analysis, advanced modelling and simulations by leveraging lessons learned from previous efforts. Evaluate new technologies in realistic operating environments to accurately reflect modern missile defense capabilities. Provide program management for maintenance, sustainment, and development for Extended Air Defense Simulation (EADSIM), and the Joint Embedded Messaging System (JEMS). Develop the Future Force Experimentation Air Defense System (FFEADS) simulation model to provide operator-in-the-loop representations of all Army air and missile defense weapon, and command and control systems.</p>		0.749	0.875	0.875
<p>Title: Strategic Missile Defense Operations Resourcing and Support</p> <p>Description: Requirement supports the SMDCoE responsibility to provide resources to support underlying operating expenses for the strategic missile defense force development mission area.</p> <p>FY 2024 Plans:</p>		1.823	1.997	2.010

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
Resources provide the support staff for senior SMDCoE leadership, budget and program support, reimbursement for Army Contracting Command (ACC), and a variety of logistical support requirements all necessary to sustain operations and ensure efficient accomplishment of the larger force development mission. FY 2025 Plans: Continue to provide operational and logistical support to ensure the long-range planning and overall mission accomplishment of the Army SMDCoE. FY 2024 to FY 2025 Increase/Decrease Statement: Increase due to economic assumptions.				
Accomplishments/Planned Programs Subtotals		11.723	12.904	13.031
		FY 2023	FY 2024	
Congressional Add: Program increase - integrated environmental control and power		16.000	-	
FY 2023 Accomplishments: Develop cooling tech for the Force to facilitate integration of power generation equipment with environmental control systems. Develop advanced high efficiency AC and DC compatible electronics cooling technologies for the rapid integration of highly compact and energy efficient DC generators. Integrate thermal and power management subsystems to refine and mature platforms for directed energy weapon (DEW) in pods or small stationary container systems to more effectively operate and contribute to Integrated Air and Missile Defense objectives.				
Congressional Add: A2IFS (Advanced Dynamic and Features Simulation)		20.000	-	
FY 2023 Accomplishments: Develop advanced ground test techniques and technologies to dramatically decrease the cost and schedule associated with the development of ground testing and hypersonic systems development by: Providing continuous test capability to accelerate the deployment of advanced systems Providing precise control of testing environment provides highest fidelity data capture Providing a secure method to develop future systems without adversary observation.				
Congressional Add: System Engineering Research into System Integration Air and Missile		10.000	-	

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		FY 2023	FY 2024
<p>FY 2023 Accomplishments: Conduct an Advanced System Engineering Research into System Integration Air and Missile (SERSAM) for complete kill chain of air and missile defense technology evaluation capability. SERSAM will be designed and developed to include offensive and defensive weapon technologies to engage threats in a realistic system of systems environment. Work will include technology trade studies of advanced technologies and defense systems. Simulated engagement plans would be utilized to drive the testbed simulations (e.g. 3DOF, 6DOF) with High Frequency.</p>			
<p>Congressional Add: Mobile Solid State High Power Microwave</p> <p>FY 2023 Accomplishments: Develop High Power Microwave (HPM) technologies and systems capable of engaging specific target classes.</p> <p>Develop and Demonstrate Scalable HPM Devices that can be integrated on multiple platforms.</p> <p>Assess HPM lethality to optimized effects in threat systems.</p> <p>Identify HPM protection capabilities to battlefield systems.</p>		25.000	-
<p>Congressional Add: Pragmatic Artificial Intelligence and New Technology</p> <p>FY 2023 Accomplishments: Establish the Laboratory to apply Artificial Intelligence (AI) "Expert Systems" to near-term, engineering solutions.</p> <p>Machine Learning based Computer Vision with application to both Automatic Target Recognition (ATR) and image-based map generation.</p> <p>Test asset deployment planning optimization using AI expert systems.</p> <p>Planning and optimization using AI expert systems for the Integrated Defense Planner Lab</p> <p>AI enabled weapons pairing to optimize weapon to threat assignments in a complex environments.</p>		15.000	-
<p>Congressional Add: Gun Launched Interceptors (GLI)</p> <p>FY 2023 Accomplishments: Counter - Rocket, Artillery, Mortar / Unmanned Aerial Systems (C-RAM / C-UAS) defenses can be overwhelmed by swarm attack. Prototype a maneuverable, laser guided GLI by utilizing an Insensitive Munitions compliant solid propulsion divert system and a laser seeker assembly. Design, integrate,</p>		3.000	-

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		FY 2023	FY 2024
and test a prototype GLI to address the C-RAM / C-UAS mission as part of the Integrated Air and Missile Defense role.			
Congressional Add: Sensing, Modeling, Analysis, Requirements, and Training (SMART) FY 2023 Accomplishments: Rapid Mission planning and Range Safety capabilities leveraging existing, proven and low-risk systems. Complete, accredit, and deploy the Flight Analysis Software Toolkit for weapons flight mission planning and flight testing. Includes requirement to expedite evaluation of pre-test predictions with observed performance in long range weapon test event. Develop deployable ground-based (land/sea) unmanned sensors that measure weapon system accuracy, lethality, and potential for collateral effects.		10.000	-
Congressional Add: Weather Impacts Tool Kit (WITK) FY 2023 Accomplishments: Rapid Mission planning and Range Safety capabilities leveraging existing, proven and low-risk systems. Complete, accredit, and deploy the Flight Analysis Software Toolkit for weapons flight mission planning and flight testing. Includes requirement to expedite evaluation of pre-test predictions with observed performance in long range weapon test event. Develop deployable ground-based (land/sea) unmanned sensors that measure weapon system accuracy, lethality, and potential for collateral effects.		5.000	-
Congressional Add: AI/ML for Integrated Fires (AIF) FY 2023 Accomplishments: Develop and Artificial Intelligence/Machine Learning (AI/ML) engineering software for command and control for integrated fires capability. Apply AI software that captures expert knowledge into a autonomous capability Develop methodologies, decision making criteria matching expert knowledge for Command and Control applications for integrated fires in complex environments.		2.000	-
Congressional Adds Subtotals		106.000	-

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

N/A

Remarks

SMDCoE strategic missile defense capability development efforts have a natural association and linkage with Army Space and High Altitude (SHA) capability development also performed within the SMDCoE. Emerging space and high altitude technologies and concepts often influence SMD identification, tracking and response.

D. Acquisition Strategy

N/A.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Army **Date:** March 2024

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab
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Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Personnel and Operations Support	TBD	SMDC : COS / HSV	31.004	8.356		8.934		9.040		-		9.040	Continuing	Continuing	-
Subtotal			31.004	8.356		8.934		9.040		-		9.040	Continuing	Continuing	N/A

Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contracts	Various	SMDC : COS / HSV	13.480	3.367		3.970		3.991		-		3.991	Continuing	Continuing	-
Integrated Environmental Control and Power (CA)	TBD	SMDC : Various	5.000	16.000		-		-		-		-	0.000	21.000	-
A2IFS (Advanced Dynamic and Instrumentation and Features Simulation) (CA)	TBD	SMDC : Various	23.500	20.000		-		-		-		-	0.000	43.500	-
System Engineering Reseach into System Integration Air and Missile (CA)	TBD	SMDC : Various	-	10.000		-		-		-		-	0.000	10.000	-
Mobile Solid State High Power Microwave (CA)	TBD	SMDC : Various	-	25.000		-		-		-		-	0.000	25.000	-
Pragmatic Arificial Intelligence and New Technology (CA)	TBD	SMDC : Various	-	15.000		-		-		-		-	0.000	15.000	-
Gun Launched Interceptors (CA)	TBD	SMDC : Various	-	3.000		-		-		-		-	0.000	3.000	-
Sensing, Modeling, Analysis, Requirements, and Training (SMART) (CA)	TBD	SMDC : Various	-	10.000		-		-		-		-	0.000	10.000	-
Weather Impacts Tool Kit (WITK) (CA)	TBD	SMDC : Various	-	5.000		-		-		-		-	0.000	5.000	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / Army Missile Defense Systems Integration	Project (Number/Name) TR5 / Missile Defense Battlelab

Event Name	FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Experiments & Technology Enhancements of Prototypes	[Redacted]																											
Development of Extended Air Defense Simulation Updates	[Redacted]																											
Reconfigurable Tactical Operations System (RTOS) Development	[Redacted]																											
Force Development Support to the Air and Missile Defense...	[Redacted]																											
AN/TPY-2 Forward Based Mode (FBM) Program Management	[Redacted]																											
Missile Defense Simulation Support for the Joint Warfight...	[Redacted]																											
Force Design Requirements Assessment for Missile Defense...	[Redacted]																											
Hypersonics Tracking Capability Development	[Redacted]																											
Provide Support to Army Future Command's Modernization E...	[Redacted]																											
Future Force Experimentation Air Defense System (FFEADS)...	[Redacted]																											
Analysis Support to Joint Inter Agency Missile Defense O...	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603305A / <i>Army Missile Defense Systems Integration</i>	Project (Number/Name) TR5 / <i>Missile Defense Battlelab</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Experiments & Technology Enhancements of Prototypes	1	2022	4	2029
Development of Extended Air Defense Simulation Updates	1	2022	4	2029
Reconfigurable Tactical Operations System (RTOS) Development	1	2022	4	2029
Force Development Support to the Air and Missile Defense Cross Functional Team	1	2022	4	2029
AN/TPY-2 Forward Based Mode (FBM) Program Management	1	2022	4	2029
Missile Defense Simulation Support for the Joint Warfighting Concept	1	2022	4	2029
Force Design Requirements Assessment for Missile Defense Forces	1	2022	4	2029
Hypersonics Tracking Capability Development	1	2022	4	2029
Provide Support to Army Future Command's Modernization Enterprise Processes	1	2022	4	2029
Future Force Experimentation Air Defense System (FFEADS) Development	2	2022	3	2024
Analysis Support to Joint Inter Agency Missile Defense Office (JIAMDO)	1	2022	3	2024