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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0208030F / <i>War Reserve Materiel - Ammunition</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	3.943	10.288	8.175	0.000	8.175	10.380	10.425	10.512	10.892	Continuing	Continuing
648030: <i>Operational Weaponeering and Analysis</i>	-	3.943	10.288	8.175	0.000	8.175	10.380	10.425	10.512	10.892	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
The AF has assumed operational support and development of the Integrated Munitions Effects Assessment (IMEA) software program from the Defense Threat Reduction Agency.

A. Mission Description and Budget Item Justification

The Operational Weaponeering and Analysis (OWA) branch in the Weapons PEO provides mission critical classified weapons' effectiveness analysis and Modeling and Simulation (M&S) tools in direct support of the Air Combat Command (ACC) Targeting mission. The M&S Targeting tool capabilities are designed to meet both Air Force (AF) Master Plan and DoD National Defense Strategy objectives and LOEs.

The Weapons PEO within AFLCMC is integrating ACC and AFRL MAJCOM goals to establish a Digital Engineering and Transformation path to create a 'pipeline' of capabilities that will support weapon and target requirements integration from R&D to Operational Warfighting within ACC, Combatant Commands (CCMDs), and other DoD Intelligence Agencies. OWA provides mission critical National Security Software (NSS) M&S software to meet instructions and directives found in CJCSI 3160 and 3170, as well as, AFI 14-401 and JP 3-60. M&S classified software tools are operationally critical to overall mission success and weapons employment. Weapons employment is not legally possible until a complete target and weapon analysis has been completed. The classified M&S software tools are in constant development to support evolving weapon phenomenology (conventional, directed energy, high power microwave, cyber, hypersonic, etc.) within the Weapons PEO and target modeling of a wide range of multi-domain targets, which includes structural, ground mobile, ships, and more.

The Integrated Munitions Effects Analysis (IMEA) software is a classified mission critical program that provides Air Force Operational Warfighters with unique analytical capabilities. These unique capabilities are associated with Hard Deeply Buried Targets (HDBTs), Nuclear Weapons, and Weapons of Counter Mass Destruction (C-WMD) weapons employment. In addition, IMEA also analyzes national strategic sites facility defeat information with Nuclear and WMD weapons in support of Global Strike Command operational warfighter requirement. IMEA is also the software for Massive Ordnance Penetrator (MOP) and Massive Ordnance Air Blast (MOAB) lethality estimates in DoD.

The Air Force Target and Effect Software (AFTES) provides an all-domain weapon and target capability to support Advanced Target Development and Intermediate Target Development within ACC and Joint environments. This classified software creates software that is digital, agile, and open. The tool is focused on integration of capabilities from ABMS into the JADC2 environment within a single open Modelling and Simulation (M&S) Engagement Framework to provide capabilities to the tactical edge. In addition, AFTES will draw its requirements from the ACC Agile Combat Employment (ACE) LOE to meet objectives laid out by the CSAF.

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In addition to operational support, IMEA and AFTES provides analytical reachback for both operational and weapon acquisition communities. OWA also aligns with Air Force Research Laboratory (AFRL) and Defense Threat Reduction Agency (DTRA) Research and Development (R&D) weapon lethality and effectiveness missions to create an R&D pipeline of capabilities all maintained in a single M&S software framework which allows the software to be easily developed, deployed, and maintained within the OWA Division.

The AF assumed operational support and development of the IMEA program from the Defense Threat Reduction Agency in FY22. DTRA will continue to support Air Force with basic R&D research of new capabilities associated with HDBT, Nuclear, and WMD as defined by Memorandum of Agreement (MOA) between DTRA and the AF. OWA has become the operational transition partner for DTRA and AFRL to integrate and field all weapon and target R&D technology to AF and other Joint Environments.

This program leverages Digital acquisition tenets of open, agile, and digital. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

The FY2024 funding request was reduced by \$2.163 million to account for the availability of prior year execution balances.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.300M was expended for civilian pay expenses in this program element, and in FY23 \$0.350M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>
Previous President's Budget	3.943	10.288	10.315	0.000	10.315
Current President's Budget	3.943	10.288	8.175	0.000	8.175
Total Adjustments	0.000	0.000	-2.140	0.000	-2.140
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-2.140	0.000	-2.140

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Change Summary Explanation

The FY24 funding request was reduced by \$2.163 million to account for the availability of prior year execution balances.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<p>Title: Operational Weaponing and Analysis</p> <p>Description: The Operational Weaponing and Analysis (OWA) provides weapons' effectiveness data and classified software Modeling and Simulation (M&S) tools to support the Air Force (AF) Requirements Process, Combatant Commands (COCOMs), and Major Commands (MAJCOMS).</p> <p>FY 2023 Plans: OWA will create an AF Weapon and Target (WEPTAR) Operational Users Working Group to review and approve software and targets supported in OWA software tools. OWA will provide this singularly unique forum for AF and Joint service level demonstrations of developmental methodologies and data to support weapon and target effectiveness. Collect, assess and inject operational user and analyst end user feedback into the product backlogs to enhance 'Speed to Fleet' efforts.</p> <p>Continue development and accreditation of the DEVSECOPS pipeline tool stack to support Agile Continuous Integration and Continuous Development (CI/CD) pipeline and provide quarterly Technical Product Previews (TPPs) of evolving phenomenology models and operational capabilities all vetted by the WEPTAR Operational Community stakeholders.</p> <p>Focus on all domain development to include kinetic and directed energy in FY23 to create KE/DE synergistic effects. Being review of Cyber integration into the EndGame Framework architecture. Continue kinetic weapon development to support target and new weapon data models including hypersonics to support multi-domain capabilities within both IMEA and AFTES using the EndGame Enterprise framework to support a common AF and Joint M&S lethality framework. All weapon data, target data and methodology will be hosted in a the Air Force Combined Effects Repository (AFCER). The repository will be hosted on the AF WeaponOne (W1) / RogueOne (R1) Digital Engineering environment.</p> <p>Refactor IMEA weapon and target data and methodologies into a common engagement lethality architecture to enable CI/CD continuous Approval to Operate (cATO) pipeline using by AFTES. Continue to develop AFTES using the AFCER pipeline capabilities that will allow leveraging of hydrocode capabilities developed and supported by Department of Energy (DoE) national labs R&D community.</p>	3.943	10.288	8.175	0.000	8.175

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
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Develop, validate, and accredit improved computer vulnerability and weapons effectiveness in support of warfighter requirements. Integrate Verification, Validation and Accreditation (VV&A) and Independent Verification and Validation (IV&V) efforts into Agile product development processes.

FY 2024 Base Plans:

The AF Weapon and Target (WEPTAR) Operational Users Working Group will review and approve software and targets supported in OWA software tools. OWA will provide this singularly unique forum for AF and Joint service level demonstrations of developmental methodologies and data to support weapon and target effectiveness. Collect, assess and inject operational user and analyst end user feedback into the product backlogs to enhance 'Speed to Fleet' efforts.

Will further the development and accreditation of the DEVSECOPS pipeline tool stack to support Agile Continuous Integration and Continuous Development (CI/CD) pipeline and provide quarterly Technical Product Previews (TPPs) of evolving phenomenology models and operational capabilities all vetted by the WEPTAR Operational Community stakeholders.

Will continue focus on all domain development to include kinetic and directed energy in FY23 to create KE/DE synergistic effects. Review Cyber integration into the EndGame Framework architecture. Continue kinetic weapon development to support target and new weapon data models including hypersonics to support multi-domain capabilities within both IMEA and AFTES using the EndGame Enterprise framework to support a common AF and Joint M&S lethality framework. All weapon data, target data and methodology will be stored in the Air Force Combined Effects Repository (AFCER), hosted on the AF WeaponOne (W1) / RogueOne (R1) Digital Engineering environment.

Continue refactoring IMEA weapon and target data and methodologies into a common engagement lethality architecture to enable CI/CD continuous Approval to Operate (cATO) pipeline usage by AFTES. Continue to develop AFTES using the AFCER pipeline capabilities that will allow leveraging of hydrocode capabilities developed and supported by Department of Energy (DoE) national labs R&D community.

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Develop, validate, and accredit improved computer vulnerability and weapons effectiveness in support of warfighter requirements. Integrate Verification, Validation and Accreditation (VV&A) and Independent Verification and Validation (IV&V) efforts into Agile product development processes. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased due to the availability of prior year execution balances.					
Accomplishments/Planned Programs Subtotals	3.943	10.288	8.175	0.000	8.175

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF 01 355990: <i>Items Less Than \$5</i>	9.164	0.000	-	-	-	-	-	-	-	-	Continuing Continuing

Remarks

E. Acquisition Strategy
Performance-based contracts are primarily used for this support. IMEA and AFTES maximize the use of competitive awards and uses various contract types, employs large and small contractors, and is focused to achieve agency socio-economic goals and incorporate DoD acquisition reform initiatives.

Both AFTES and IMEA are paralleling AF Digital Engineering contracting effort to add Agile capabilities into performance contracts. IMEA and AFTES use physics based modeling requiring specialized methodology development unique to specific weapon capabilities. The Operational and Analysis (OWA) has identified multiple sources of software development include both commercial and defense working capital.

OWA identified multiple contacts to support software development efforts including five year indefinite delivery/indefinite quantity contracts (IDIQs) awarded by Army Contracting Command (ACC), General Services Administration (GSA), and Air Force. We are working to award additional GSA contracts to support software development in the future.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0208030F / <i>War Reserve Materiel - Ammunition</i>	Project (Number/Name) 648030 / <i>Operational Weaponeering and Analysis</i>

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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

<i>Integrated Munitions Effects Assessment (IMEA)</i>	
Integrated Munitions Effects Assessment (IMEA)	
<i>Air Force Targeting and Effects Software (AFTES)</i>	
Air Force Targeting and Effects Software (AFTES)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0208030F / <i>War Reserve Materiel - Ammunition</i>	Project (Number/Name) 648030 / <i>Operational Weaponeering and Analysis</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Integrated Munitions Effects Assessment (IMEA)</i>				
Integrated Munitions Effects Assessment (IMEA)	1	2022	4	2028
<i>Air Force Targeting and Effects Software (AFTES)</i>				
Air Force Targeting and Effects Software (AFTES)	1	2022	4	2028