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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	0.000	3.943	10.288	0.000	10.288	10.315	10.319	10.325	10.428	Continuing	Continuing
648030: <i>Operational Weaponeering and Analysis</i>	-	0.000	3.943	10.288	0.000	10.288	10.315	10.319	10.325	10.428	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The AF will assume operational support and development of the Integrated Munitions Effects Assessment (IMEA) software program from the Defense Threat Reduction Agency starting FY22.

A. Mission Description and Budget Item Justification

The Operational Weaponeering and Analysis (OWA) provides weapons' effectiveness data and classified software Modeling and Simulation (M&S) tools to support the Air Force (AF) Master Plan objectives and National Defense Strategy within Combatant Commands (COCOMs), and Major Commands (MAJCOMS). OWA provides mission critical National Security Software (NSS) 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 (directed energy, high power microwave, cyber, hypersonic, etc.) 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 only software, which is program of record for Massive Ordinance Penetrator (MOP) and Massive Ordinance 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 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.

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 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 Operational Weaponeering and Analysis Division.

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The AF will assume operational support and development of the IMEA program from the Defense Threat Reduction Agency starting 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 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 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 FY21 \$0.0M was expended for civilian pay expenses in this program element, and in FY22 \$0.300M 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)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	3.943	0.000	0.000	0.000
Current President's Budget	0.000	3.943	10.288	0.000	10.288
Total Adjustments	0.000	0.000	10.288	0.000	10.288
• 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	10.288	0.000	10.288

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Operational Weaponing and Analysis	0.000	3.943	10.288	0.000	10.288
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).					

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
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FY 2022 Plans:
 Conduct Operational Users Working Group (OUWG) reviews, providing a 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 product development cycles.

Exploit Agile Continuous Integration and Continuous Development (CI/CD) pipeline to provide Technical Previews (TPs) of evolving phenomenology models and operational capabilities.

Develop common target and weapon data models to support multi-domain capabilities within 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) Digital Engineering P1 environment.

Refactor IMEA weapon and target data and methodologies into a common engagement lethality architecture to enable CI/CD pipeline.

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 2023 Base 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.

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.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
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.					
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.					
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.					
<i>FY 2023 OCO Plans:</i> N/A					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding increased because the AF assumes full responsibility for IMEA from DTRA.					
Accomplishments/Planned Programs Subtotals	0.000	3.943	10.288	0.000	10.288

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF 01 355990: <i>Items Less Than \$5</i>	-	9.164	-	-	-	-	-	-	-	-	Continuing Continuing

Remarks

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E. Acquisition Strategy

Performance-based contracts are primarily used for this support. IMEA and AFTES will 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 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 for outyear development.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
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 Weaponneering and Analysis</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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 2023 Air Force		Date: April 2022
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 Weaponneering 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	2027
<i>Air Force Targeting and Effects Software (AFTES)</i>				
Air Force Targeting and Effects Software (AFTES)	1	2022	4	2027