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

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</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	-	29.215	63.906	45.884	0.000	45.884	40.775	43.560	46.178	47.828	Continuing	Continuing
654236: <i>Engineering Analysis</i>	-	4.405	0.994	4.519	0.000	4.519	2.651	2.719	2.774	2.874	Continuing	Continuing
654807: <i>Nuclear Weapon System Technology and Integration</i>	-	18.933	61.411	39.298	0.000	39.298	36.012	38.676	41.195	42.664	Continuing	Continuing
655708: <i>Nuclear Weapons Support</i>	-	5.877	1.501	2.067	0.000	2.067	2.112	2.165	2.209	2.290	Continuing	Continuing

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

The Air Force Nuclear Weapons Center (AFNWC), Kirtland AFB, NM, is the primary executing agency for this program. The AFNWC is tasked with maintaining and providing technical expertise on all Air Force (AF) nuclear weapons and weapon systems. This program provides resources for technical and programmatic activities, which includes research, development, test, and evaluation of all nuclear-certified equipment/systems, as well as performing independent capability analyses on all AF nuclear weapon systems activities, including weapons development and sustainment; interoperability; compatibility; safety, security, and reliability; and nuclear stockpile certification management for legacy and modernized AF nuclear weapon systems.

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 \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	30.050	64.425	39.967	0.000	39.967
Current President's Budget	29.215	63.906	45.884	0.000	45.884
Total Adjustments	-0.835	-0.519	5.917	0.000	5.917
• Congressional General Reductions	0.000	-0.519			
• 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	-0.835	0.000			
• Other Adjustments	0.000	0.000	5.917	0.000	5.917

**Change Summary Explanation**

FY24 funding increase of \$5.842M is for nuclear certification management (project 654807).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>				<b>Project (Number/Name)</b> 654236 / <i>Engineering Analysis</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
654236: <i>Engineering Analysis</i>	-	4.405	0.994	4.519	0.000	4.519	2.651	2.719	2.774	2.874	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The AFNWC is the executing agency for the Engineering Analysis program that provides and maintains technical expertise on all AF nuclear weapons and weapon systems and conducts mission-level cyber risk analysis, integrates cybersecurity into systems engineering processes, enhances adaptability and agility via application of modular designs and approaches, develops cyber-savvy workforce, increases assurance in fielded systems in a cost effective and efficient manner, increases the integration of cyber intelligence and enables cyber operation flights and cyber protection teams. This program provides resources for technical and programmatic activities which include performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; training; safety, security, and reliability; and Air Force legacy nuclear stockpile management/retirement. The AFNWC will partner with external agencies to achieve cross cutting solutions to mitigate cyber vulnerabilities. The implementation of Digital Engineering and development of Model Based System Engineering will facilitate the testing, analysis and timely delivery of nuclear weapons systems.

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 \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> Engineering Analysis	4.405	0.994	4.519	-	4.519
<b>Description:</b> Provide the technical oversight of all AF nuclear weapons, delivery systems, and support systems. Provide the engineering and technical management expertise required in critical areas of nuclear weapons safety, security, reliability, operations, modernization, testing, and counterproliferation.					
<b>FY 2023 Plans:</b> Analyze and document nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment. Includes nuclear command, control, and communications (NC3) systems in this effort, as well as adding digital materiel management initiatives.					
<b>FY 2024 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force	<b>Date:</b> March 2023
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<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654236 / <i>Engineering Analysis</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Continue to conduct technical risk assessments for nuclear weapons programs including NC3 systems. Continue to implement digital data management strategies. Develop Model-based Systems Engineering tools and processes. Expand and automate cyber risk management processes.					
<b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b> Funding increased to conduct technical risk assessments and support digital engineering efforts.					
<b>Accomplishments/Planned Programs Subtotals</b>	4.405	0.994	4.519	-	4.519

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

N/A

**Remarks**

**D. Acquisition Strategy**

Cost Plus Award Fee (CPAF) and Military Interdepartmental Purchase Request (MIPR) will be used to obtain technical analyses and technical support for safety, operations, and counter proliferation assessments. Supporting activities are contracted separately using contract strategies deemed most appropriate to the effort. All contracts will be openly competed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support	<b>Project (Number/Name)</b> 654236 / Engineering Analysis
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Federally Funded Research and Development Center (FFRDC) Cybersecurity Vulnerability Analysis	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.610	Nov 2021	0.020	Nov 2022	0.655	Nov 2023	-		0.655	Continuing	Continuing	-
FFRDC Emulation of the Strategic Missile Integration Complex (SMIC)	MIPR	AEROSPACE : Kirtland AFB, NM	-	1.250	Apr 2022	-		-		-		-	0.000	1.250	-
<b>Subtotal</b>			-	1.860		0.020		0.655		-		0.655	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Secure Cyber Facility Support	MIPR	Various : Kirtland AFB, NM	-	0.513	Apr 2022	-		-		-		-	0.000	0.513	-
Mission Support	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.774	Apr 2022	0.114	Apr 2023	1.068	Apr 2024	-		1.068	Continuing	Continuing	-
Model Based Systems Engineering (MBSE)	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.458	Apr 2022	-		-		-		-	0.000	0.458	-
Digital Systems Engineering	MIPR	Various : Kirtland AFB, NM	-	-		0.860	Jun 2023	-		-		-	0.000	0.860	-
Digital Engineering Orchestration	MIPR	Various : Kirtland AFB, NM	-	-		-		0.600	Apr 2024	-		0.600	Continuing	Continuing	-
Digital Engineering Pilot Project	MIPR	Various : Kirtland AFB, NM	-	-		-		0.500	Apr 2024	-		0.500	Continuing	Continuing	-
Zero Trust Implementation	MIPR	Various : Kirtland AFB, NM	-	-		-		0.500	Apr 2024	-		0.500	Continuing	Continuing	-
Cloud Implementation Sustainment	MIPR	Various : Kirtland AFB, NM	-	-		-		0.571	Apr 2024	-		0.571	Continuing	Continuing	-
<b>Subtotal</b>			-	1.745		0.974		3.239		-		3.239	Continuing	Continuing	N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654236 / <i>Engineering Analysis</i>
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	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

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
<b>Engineering &amp; Cyber Security Analysis</b>																												
Emulation of the SMIC																												
Cyber Security Vulnerability Assessments & Analysis																												
Secure Cyber Facility Support																												
MBSE																												
Digital Engineering Orchestration & Pilot Project																												
Zero Trust Implementation																												
Cloud Implementation Sustainment																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654236 / <i>Engineering Analysis</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Engineering &amp; Cyber Security Analysis</i></b>				
Emulation of the SMIC	1	2022	4	2023
Cyber Security Vulnerability Assessments & Analysis	1	2022	4	2027
Secure Cyber Facility Support	1	2022	4	2023
MBSE	1	2022	2	2024
Digital Engineering Orchestration & Pilot Project	3	2024	4	2027
Zero Trust Implementation	3	2024	4	2027
Cloud Implementation Sustainment	3	2024	4	2027

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support				<b>Project (Number/Name)</b> 654807 / Nuclear Weapon System Technology and Integration			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
654807: Nuclear Weapon System Technology and Integration	-	18.933	61.411	39.298	0.000	39.298	36.012	38.676	41.195	42.664	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The AFNWC is the executing agency for the Nuclear Weapon System Technology and Integration (NWST&I) program that ensures the safety, survivability, security, and reliability of AF nuclear weapon systems in direct support to the military warfighters and force providers. Emphasis is placed on independent technical assessments in support of nuclear compatibility, nuclear safety design, technical orders, and weapon system safety rules. Also provides assurance of survivability and mitigation of vulnerabilities to these unique systems. These requirements are met through studies and analyses, demonstration, modeling and simulation (M&S), test and evaluation (T&E), trade studies, requirements analysis, and recommendations to planning, policy, and doctrine. This program also conducts DoD-required certification for legacy, modernized, and new nuclear weapon systems. Starting in FY23, this program provides funding for DoD-required certification for legacy, modernized, and new nuclear weapon systems (previously conducted in this program element, project 654236).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0M was expended for civilian pay expenses in this program element, and in FY23 0M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> Weapons Effects	6.002	6.827	6.638	0.000	6.638
<b>Description:</b> Ensures survivable and effective AF systems through evaluation, test, and analyses of nuclear environments and their impact to AF platforms. Develops and maintains the sole AF analytical capability to assess nuclear effects on weapon systems, their inherent hardness and mission degradation within a nuclear environment. These efforts shape and support requirements for new acquisitions, fielded systems, as well as providing critical expertise for exercises and operational planning.					
<b>FY 2023 Plans:</b> Increase development, modernization, verification and validation of M&S tools and testing methods. Develop rigorous methods and tools for testing and predictive response to nuclear effects. Conduct analysis to establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft, weapon systems, Intercontinental Ballistic Missiles (ICBM), and Nuclear Command,					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<p>Control, Communications (NC3) assets. Expand development of methods and tools used to assure weapon effectiveness in operationally relevant environments. Support AFGSC through oversight and report standardization of AF aircraft Electromagnetic Pulse (EMP) threat-level test execution.</p> <p><b>FY 2024 Base Plans:</b> Continue to increase development, modernization, verification and validation of M&amp;S tools and testing methods. Continue to develop rigorous methods and tools for testing and predictive response to nuclear effects. Continue to increase analysis to establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft, weapon systems, ICBMs, and NC3 assets. Continue to expand development of methods and tools used to assure weapon effectiveness in operationally relevant environments. Continue to support AFGSC through oversight and report standardization of AF aircraft EMP threat-level test execution.</p> <p><b>FY 2024 OCO Plans:</b> N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decreased slightly due to scope of FY24 activities.</p>					
<p><b>Title:</b> Air Force Nuclear Red Team (AFNRT)</p> <p><b>Description:</b> The AFNRT independently evaluates vulnerabilities of current and future strategic systems across their lifecycle vs near term and emerging threats. These strategic systems capability assessments include nuclear weapon system fragility analysis, vulnerability modes &amp; effects analysis, M&amp;S, and effects testing. As part of the effort to assess the vulnerabilities, data is used from various tests and M&amp;S tools to develop mitigation strategies for consideration by program offices. This analysis of various threats to AF nuclear weapon systems is used to inform the warfighter's concept of operations (CONOPS), modernization activities, and new acquisitions.</p> <p><b>FY 2023 Plans:</b> Expand assessments of strategic system capabilities/vulnerabilities relative to air delivered (AD) nuclear weapon systems, ICBMs, and human factors related to strategic systems. Conduct threat evaluations and analyses to address current and future threats that include, but are not limited to, kinetic, electronic warfare, cyber, supply chain, maintenance/logistics, and human factor (HF) vulnerabilities. Assessments will include nuclear weapon system fragility analysis, vulnerability modes and effects analysis, M&amp;S and combined environment testing. Assessments will be evaluated using existing weapon/platform paired with current and emerging threat vectors,</p>	12.931	14.710	14.323	0.000	14.323

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<p>as well as proposed modernization requirements. AD, ICBM, NC3, and HF assessments will be used in the development of requirements, CONOPS, and TTPs for modernization activities, and new acquisitions. Provide Conventional-Nuclear Integration (CNI) analysis to support the CSAF CNI Capstone Roadmap development and path forward.</p> <p><b>FY 2024 Base Plans:</b> Continue to expand assessments of strategic system capabilities/vulnerabilities relative to AD nuclear weapon systems, ICBMs, and HFs related to strategic systems. Continue threat evaluations and analyses to address current and future threats that include, but are not limited to, kinetic, electronic warfare, cyber, supply chain, maintenance/logistics, and HF vulnerabilities. Assessments will include nuclear weapon system fragility analysis, vulnerability modes and effects analysis, M&amp;S and combined environment testing. Assessments will be evaluated using existing weapon/platform paired with current and emerging threat vectors, as well as proposed modernization requirements. AD, ICBM, NC3, and HF assessments will be used in the development of requirements, CONOPS, and TTPs for modernization activities, and new acquisitions. Provide CNI analysis to support the CSAF CNI Capstone Roadmap development and path forward.</p> <p><b>FY 2024 OCO Plans:</b> N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding decreased slightly due to scope of FY24 activities.</p>					
<p><b>Title:</b> Nuclear Certification Management</p> <p><b>Description:</b> This effort continues nuclear certification activities and development of nuclear certification tools that were previously contained in this program element, under project 654236, Engineering Analysis, prior to FY23. This funding is for statutory and regulatory (DoD and AF) nuclear enterprise-wide nuclear certification activities by AFNWC. It is distinct from, but complemented by, the funding identified by specific nuclear weapons programs (e.g., B-21, LGM-35A Sentinel, F-35A, F-15E, etc.) for their roles, responsibilities and authorities in nuclear certification, as segregated and directed by the same regulations (DODM 5210.41M and AFI 63-125). By DoD mandate, AFNWC provides an external (independent of program office) review of a weapon system's nuclear safety and surety features, eventually certifying the weapon system and its operational employment procedures. Nuclear certification activities include independent AF technical reviews, evaluations, and analyses for nuclear safety themes, employment procedures, delivery systems (warhead and/or carrier platforms, subsystems, or components), support equipment, software, and facilities that handle, maintain, or operate nuclear weapons or nuclear weapon systems to ensure compliance with national, DoD, and AF</p>	0.000	39.874	18.337	0.000	18.337

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</i>

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<p>guidance. AFNWC's scope includes overall management of the entire nuclear certification process for the AF, as well as the execution of compatibility certification, nuclear safety design, weapon system safety rules, and technical orders, and functions (e.g., security) involving personnel and organizations assigned to perform nuclear missions. The objective of this project is focused on new nuclear weapon system acquisition programs, as well as fielded system sustainment, modifications, and upgrades. This project will manage the flow of nuclear certification activities and provide certification data to all stakeholders via the Nuclear Certification Analysis Tool (NCAT). Examples include certification requirements plans, Aircraft Monitor and Control (AMAC) certification, surveillance testing, consequence analyses, qualitative and quantitative hazard evaluations, and myriad other activities.</p> <p><b>FY 2023 Plans:</b> Invest in the modernization of the Family of Testers (FoT) while maintaining the Special Weapons Interface Tester (SWIFT) via design and development of improved, reliable test equipment adapted to modernized digital-enabled vehicles and weapons. Invest in and improve nuclear certification-specific data analysis capabilities (tools) to match growing weapon system complexity. Improve baseline and surge capability for AMAC testing, compatibility analyses and certification. Posture FoTs, NCAT, analyses, and processes to execute time-certain Full Weapon System Demonstrations (FWSDs) and other certification-required activities for F-35A, B-21, Long Range Standoff (LRSO) missile, Sentinel, B-52H, modernized ICBM Fuze, and seven Weapon Generation Facilities. Support DoD-requested capability growth for the NCAT analysis tool to optimize resource loading and program deconfliction.</p> <p><b>FY 2024 Base Plans:</b> Develop capabilities to optimize nuclear certification activities within the digital environment. This includes the use of artificial intelligence, and automated toolsets/algorithms to assist certifiers in assessing nuclear weapon system compliance with the four DoD safety standards. Continue to invest in capabilities to test and assess nuclear weapon compatibility with their associated delivery platforms. Continue to invest in and improve nuclear certification-specific data analysis capabilities (tools) to match growing weapon system complexity. Continue to conduct independent technical analyses to execute time-certain FWSDs and other certification-required activities for F-35A, B-21, LRSO missile, Sentinel, B-52H, modernized ICBM Fuze, and seven Weapon Generation Facilities. Continue to support DoD-requested capability growth for the NCAT analysis tool to optimize resource loading and program deconfliction.</p> <p><b>FY 2024 OCO Plans:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
N/A					
<b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b> Funding decrease is due to continued efforts to source scheduled nuclear certification activities					
<b>Accomplishments/Planned Programs Subtotals</b>	18.933	61.411	39.298	0.000	39.298

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

**Remarks**  
All sub-projects are continuous support/testing to all nuclear weapon systems.  
Follow-on contracts are for Modeling and Simulation and engineering, program and testing support efforts.

**D. Acquisition Strategy**  
The objective of the NWST&I program strategy is to provide independent technical engineering, and scientific analyses, assessments and information in support of AF nuclear weapons systems while developing, and mentoring and shaping the next generation of AF resources. Multiple Cost Plus Fixed Fee (CPFF) and/or Time and Material (T&M) and Military Interdepartmental Purchase Requests (MIPR) are/will be used to execute testing and evaluations, technical analyses and/or provide focused support unique to the nuclear enterprise, for the technology and integration processes. All contracts will be openly competed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support	<b>Project (Number/Name)</b> 654807 / Nuclear Weapon System Technology and Integration
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Family of Testers Engineering and Development	C/CPFF	Booz Allen Hamilton : Kirtland AFB, NM	-	0.000		6.866	Dec 2022	4.113	Dec 2023	0.000		4.113	0.000	10.979	-
<b>Subtotal</b>			-	0.000		6.866		4.113		0.000		4.113	0.000	10.979	N/A

**Remarks**  
Nuclear Certification Support requirements - testers

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
NWST&I - Modeling & Simulation	C/CPFF	Peerless Technology Corp : Kirtland AFB, NM, NM	-	2.177	Nov 2021	2.000	Feb 2023	4.000	Nov 2023	-		4.000	Continuing	Continuing	-
NWST&I - FFRDC Engineering & Technical Support	MIPR	Aerospace Corp(SMC) : El Segundo, CA	-	1.824	Nov 2021	5.292	Dec 2022	2.977	Nov 2023	-		2.977	Continuing	Continuing	-
NWST&I - Security Support	MIPR	Other : Kirtland AFB, NM	-	0.745	Dec 2022	0.288	Nov 2022	1.219	Jan 2024	-		1.219	Continuing	Continuing	-
NWST&I - Program Support	C/CPFF	Booz Allen Hamilton : Kirtland AFB, NM	-	3.560	Dec 2021	3.456	Nov 2022	4.290	Nov 2023	-		4.290	Continuing	Continuing	-
NWS&I - Nuclear Certification Engineering Support	C/CPFF	Booz Allen Hamilton : Kirtland AFB, NM	-	1.616	Nov 2022	22.250	Dec 2022	10.890	Mar 2024	-		10.890	Continuing	Continuing	-
NWS&I - Equipment	Various	Various : Kirtland AFB, NM	-	0.374	Mar 2022	0.208	Feb 2023	0.087	Feb 2024	-		0.087	Continuing	Continuing	-
NWST&I	MIPR	MSIC : TBD	-	0.000		0.500	Jan 2023	0.000		-		0.000	0.000	0.500	-
<b>Subtotal</b>			-	10.296		33.994		23.463		-		23.463	Continuing	Continuing	N/A

**Remarks**  
Added line for equipment. Nuclear Certification Support requirements - Eng services

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support	<b>Project (Number/Name)</b> 654807 / Nuclear Weapon System Technology and Integration
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>			<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
NWST&I - Evaluation	C/CPAF	John Hopkins : TBD	-	0.404	Aug 2022	0.000		0.000		-		0.000	Continuing	Continuing	-
NWST&I - Weapons Effects Uncertainty Testing	MIPR	National Labs : Various, NM	-	1.000	Jan 2022	0.800	Feb 2023	1.000	Dec 2023	-		1.000	Continuing	Continuing	-
NWST&I - AFNRT Assessments 1	MIPR	National Labs : Various	-	5.329	Jul 2022	9.361	Nov 2022	5.338	Dec 2023	-		5.338	Continuing	Continuing	-
NWST&I - AFNRT Assessments 2	C/CPFF	Booz Allen Hamilton : Kirtland AFB, NM	-	0.804	May 2022	1.000	Feb 2023	1.456	Feb 2024	-		1.456	Continuing	Continuing	-
NWST&I - Capability Assessments	C/FP	CMU-SEI : TBD	-	0.000		0.650	Jan 2023	0.000		-		0.000	Continuing	Continuing	-
NWST&I - AMAC Testing	C/CPAF	Booz Allen Hamilton : Kirtland AFB, NM	-	0.000		6.550	Dec 2022	2.964	Mar 2024	-		2.964	Continuing	Continuing	-
NWST&I - Testing	MIPR	WSMR : NM	-	0.000		0.500	Feb 2023	0.000		-		0.000	Continuing	Continuing	-
<b>Subtotal</b>			-	7.537		18.861		10.758		-		10.758	Continuing	Continuing	N/A

**Remarks**  
Added assessment line. Nuclear Certification Support requirements - testing

<b>Management Services (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>			<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
NWST&I Program Support Cost (PSC)	Various	Various : Kirtland AFB, NM	-	1.100	Nov 2021	1.690	Nov 2022	0.964	Nov 2023	0.000		0.964	Continuing	Continuing	-
<b>Subtotal</b>			-	1.100		1.690		0.964		0.000		0.964	Continuing	Continuing	N/A

**Remarks**  
PSC includes travel, training, supply/equipment, freight, JWICS contractor support, and communications support (ARC & JWICS Phones). Addition of Nuclear Certification Support requirements.  
FY22 includes asset freight, JWICS refresh, and VTCs. FY23 Includes SCIF requirements (NFD).

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b>							<b>Date: March 2023</b>				
<b>Appropriation/Budget Activity</b> 3600 / 5				<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>			<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</i>				
	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>		
<b>Project Cost Totals</b>	-	18.933	61.411	39.298	0.000	39.298	Continuing	Continuing	N/A		

**Remarks**  
 All sub-projects are continuous support/testing to all nuclear weapon systems.  
 Follow-on contracts for Modeling and Simulation and engineering, program and testing support efforts.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</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

<b>AF Nuclear Red Team</b>	
Assessments 1	
Assessments 2	
<b>Weapons Effects</b>	
Weapons Uncertainty	
Modeling & Simulation	
<b>Nuclear Management</b>	
Engineering Support	
<b>Nuclear Assessment</b>	
AMAC Testing	
<b>Nuclear Development</b>	
Family of Testers	
<b>Program Support</b>	
Engineering	
Security	
Program Analysis	
Program Support Cost (PSC)	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 654807 / <i>Nuclear Weapon System Technology and Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>AF Nuclear Red Team</i></b>				
Assessments 1	1	2022	4	2028
Assessments 2	1	2022	2	2026
<b><i>Weapons Effects</i></b>				
Weapons Uncertainty	1	2022	4	2028
Modeling & Simulation	1	2022	4	2028
<b><i>Nuclear Management</i></b>				
Engineering Support	2	2022	4	2028
<b><i>Nuclear Assessment</i></b>				
AMAC Testing	1	2023	4	2027
<b><i>Nuclear Development</i></b>				
Family of Testers	1	2023	4	2025
<b><i>Program Support</i></b>				
Engineering	1	2022	4	2028
Security	1	2022	4	2028
Program Analysis	1	2022	4	2025
Program Support Cost (PSC)	1	2022	4	2028

**Note**

All sub-projects are continuous support/testing to all nuclear weapon systems.  
Follow-on contracts for Modeling and Simulation and engineering, program and testing support efforts.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support				<b>Project (Number/Name)</b> 655708 / Nuclear Weapons Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
655708: Nuclear Weapons Support	-	5.877	1.501	2.067	0.000	2.067	2.112	2.165	2.209	2.290	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The modernization of legacy nuclear systems, development of new nuclear-capable aircraft and munitions and the creation of the new Weapon Generation Facilities (WGF) within Air Force Global Strike Command (AFGSC) may require new support equipment capabilities to meet system and mission requirements. Additionally, the WGF introduces a new concept of operations by integrating maintenance and storage mission sets into one facility. To support mission generation requirements, support equipment and capabilities related to the nuclear enterprise must be studied, reviewed, modified, or in extreme cases, re-developed in order to maintain operational readiness. Examples of equipment under review include, but are not limited to, power generation, heating, ventilation, and air conditioning (HVAC), munition trailers/accessories, munition lifts/accessories, tow vehicles, and munition test/maintenance stands. Any identified capability gaps may result in the design of new systems. The review, analysis and potential modification of existing equipment ensures mission generation remains executable.

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 FY23 0M was expended for civilian pay expenses in this program element, and in FY24 0M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> Nuclear Enterprise Support Equipment	5.877	1.501	2.067	-	2.067
<b>Description:</b> Nuclear Enterprise Support Equipment Review and Design					
<b>FY 2023 Plans:</b> Studies and analyses from previous efforts in this program are being leveraged to develop the next generation of munitions handling equipment, stabilized power, HVAC, munitions stands and trailers, and aerospace ground equipment used to support the nuclear enterprise. Funding supports engineering associated with requirements definition, technology maturation, and risk reduction needed to develop solutions to deliver prototypes which meet the evolving requirements of AFGSC for next-generation Common Aviation Support Equipment (CAvSE). Some examples include, but are not limited to the Small Agile Lift Truck (SALT), Electric Manually Operated Lift Truck (EMOLT), Large Nuclear Munitions Trailer (MHU-TSX/M), Multi-Capable Trailer (MCT), WGF Jammer (MHU-174X), Electric Ground Power Unit (EPUG), and Next Generation Air Pallet (NGAP).					
<b>FY 2024 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 655708 / <i>Nuclear Weapons Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Continue to utilize studies and analyses from previous efforts to develop the next generation of munitions handling equipment, stabilized power, HVAC, munitions stands and trailers, and aerospace ground equipment used to support the nuclear enterprise. Continue engineering associated with requirements definition, technology maturation, and risk reduction needed to develop solutions to deliver prototypes which meet the evolving requirements of AFGSC for next-generation CAVSE. Some examples include, but are not limited to the SALT, EMOLT, Munitions Capable Trailer (MCT).  <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b> Increase due to purchase of a small quantity of proven prototypes, prior to full-scale procurement.					
<b>Accomplishments/Planned Programs Subtotals</b>	5.877	1.501	2.067	-	2.067

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

N/A

**Remarks**

**D. Acquisition Strategy**

1. The acquisition strategy for the SALT is for MilTech, via a Partnership Intermediary Agreement (PIA), to continue to engage and support industry partners, Manufacturing Extension Partnerships (MEP), and Subject Matter Experts (SMEs) on the development and delivery of two SALT demonstration prototypes.
2. The acquisition strategy for the EMOLT is for MilTech, via a PIA, to continue to engage and support industry partners, MEP, and SMEs on the development and delivery of six EMOLT demonstration prototypes.
3. The acquisition strategy for the MHU-TSX/M is for AFGSC to continue working with Square One Corporation to design, fabricate, and test an advanced robotic munitions loader for large aircraft.
4. The acquisition strategy for the MCT is for the Air Force Research Laboratory to work with industry partners to design, fabricate, and test a prototype. The MCT is a power-assisted and manually capable approach to handling munitions and stores on combat aircraft and munition handling equipment. Next generation equipment is planned to replace MHU-226, MHU-110, and MHU-141 trailers.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / Nuclear Weapons Support	<b>Project (Number/Name)</b> 655708 / Nuclear Weapons Support
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<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Contract Award - Aerial Stores Lift Truck (Sm/Med Class) (SALT & EMOLT)	RO	AFRL/MilTech : Bozeman, MT	-	3.317	May 2022	0.825	Mar 2023	0.500	Mar 2024	-		0.500	0.000	4.642	-
Contract Award - Aerial Stores Lift Truck (Large Class) (MHU-TSX/M)	RO	AF Global Strike Cmd : Barksdale AFB, LA	-	1.900	May 2022	-		-		-		-	0.000	1.900	-
Contract Award - Munitions Handling Trailers (MCT)	TBD	TBD : TBD	-	-		-		0.452	Mar 2024	-		0.452	Continuing	Continuing	-
<b>Subtotal</b>			-	5.217		0.825		0.952		-		0.952	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Contractor Support	PO	PE Systems, Inc. : TBD	-	0.660	Mar 2022	0.676	Mar 2023	1.115	Mar 2024	-		1.115	Continuing	Continuing	-
<b>Subtotal</b>			-	0.660		0.676		1.115		-		1.115	Continuing	Continuing	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	5.877	1.501	2.067	-	2.067	Continuing	Continuing	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 655708 / <i>Nuclear Weapons Support</i>
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	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

<b><i>Nuclear Enterprise Support Equipment</i></b>																												
Small Agile Lift Truck (SALT)																												
Electric Manually Operated Lift Truck (EMOLT)																												
Large Nuclear Munitions Truck (LNMT) TSX																												
Multi-capable Trailer (MCT)																												

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604222F / <i>Nuclear Weapons Support</i>	<b>Project (Number/Name)</b> 655708 / <i>Nuclear Weapons Support</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Nuclear Enterprise Support Equipment</i></b>				
Small Agile Lift Truck (SALT)	3	2022	3	2025
Electric Manually Operated Lift Truck (EMOLT)	3	2022	4	2025
Large Nuclear Munitions Truck (LNMT) TSX	2	2022	3	2023
Multi-capable Trailer (MCT)	2	2024	2	2025

**Note**

The projects within the Weapons Generation Facility program target workflow and operation of current and future nuclear-certified systems.

The following programs were in the FY23 budget, but not in the FY24 budget:

1. Electric Tug (eTUG) program was put on hold due to no validated requirement and nuclear cert challenges with battery technology.
2. MHU-174X is currently no longer in this program due to fund constraints. The program is being continued through modernization efforts within SE&V division.
3. Next Generation Air Pallet (NGAP) was a cost share effort. The program has sufficient aviation support equipment funding and does not need additional funding at this time.