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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	4.249	26.057	30.050	0.000	30.050	-	-	-	-	-	-
654236: <i>Engineering Analysis</i>	-	2.335	4.458	4.531	0.000	4.531	-	-	-	-	-	-
654807: <i>Nuclear Weapon System Technology and Integration</i>	-	0.000	14.639	19.474	0.000	19.474	-	-	-	-	-	-
655708: <i>Nuclear Weapons Support</i>	-	1.914	6.960	6.045	0.000	6.045	-	-	-	-	-	-

**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 weapons systems activities, including weapons development and sustainment; interoperability; compatibility; safety, security, and reliability; and AF legacy nuclear stockpile certification management.

The FY2022 funding request was reduced by \$1.604 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 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$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 2022 Air Force	<b>Date:</b> May 2021
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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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	4.406	35.033	32.108	0.000	32.108
Current President's Budget	4.249	26.057	30.050	0.000	30.050
Total Adjustments	-0.157	-8.976	-2.058	0.000	-2.058
• Congressional General Reductions	0.000	-0.048			
• Congressional Directed Reductions	0.000	-8.928			
• 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	-0.157	0.000			
• Other Adjustments	0.000	0.000	-2.058	0.000	-2.058

**Change Summary Explanation**

FY21 adjusted for Nuclear weapon system technology and integration forward financing -4,670; Nuclear weapons support forward financing -2,273; Nuclear weapons support prior year carryover -1,985; Undistributed Reduction - Excess to Need -48

FY22 reduced from previous PB due to higher Air Force priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force										Date: May 2021		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support				Project (Number/Name) 654236 / Engineering Analysis			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
654236: <i>Engineering Analysis</i>	-	2.335	4.458	4.531	0.000	4.531	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Air Force Nuclear Weapons Center is the executing agency for this program. The Air Force is tasked with maintaining and providing technical expertise on all AF nuclear weapons and weapon systems and conducting mission-level cyber risk analysis, integrating cybersecurity into systems engineering, enhancing adaptability and agility via modular design and approaches, developing a cyber-savvy workforce, increasing assurance in fielded systems in a cost effective and efficient manner, increasing the integration of cyber intelligence and enabling cyber operation flights and cyber protection teams. This program provides resources for technical and programmatic activities which includes performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; training; safety, security, and reliability; Air Force legacy nuclear stockpile management/retirement; nuclear certification and nuclear certification management. The AFNWC will partner with external agencies to achieve cross cutting solutions to mitigate cyber vulnerabilities. The development of Model Based System Engineering will facilitate the testing and analysis of nuclear weapons systems.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Engineering Analysis	2.335	4.458	4.531	-	4.531
<b>Description:</b> Provide the technical oversight of all Air Force (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, certification, and counter proliferation.					
<b>FY 2021 Plans:</b> Increase analysis and documentation of nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment.					
<b>FY 2022 Base Plans:</b> Continue to increase analysis and documentation of nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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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>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Funding increases due to overall capabilities increase in Model Based Systems Engineering, risk assessment, data collection, model development, verification, and validation, weapon effectiveness, and nuclear stockpile planning and requirements assessment.					
<b>Accomplishments/Planned Programs Subtotals</b>	2.335	4.458	4.531	-	4.531

**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 2022 Air Force** **Date:** May 2021

<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>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</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>			
Federally Funded Research and Development Center (FFRDC) Cybersecurity Vulnerability Analysis	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.292	Nov 2019	0.600	Nov 2020	0.610	Nov 2021	-		0.610	-	-	-
FFRDC Emulation of the Strategic Missile Integration Complex (SMIC)	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.545	Feb 2020	1.200	Feb 2021	1.250	Feb 2022	-		1.250	-	-	-
<b>Subtotal</b>			-	0.837		1.800		1.860		-		1.860	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</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>			
Secure Cyber Facility Support	MIPR	Various : Kirtland AFB, NM	-	0.227	Nov 2019	0.500	Nov 2020	0.513	Nov 2021	-		0.513	-	-	-
Mission Support	MIPR	AEROSPACE : Kirtland AFB, NM	-	0.612	Feb 2020	0.900	Feb 2021	0.900	Feb 2022	-		0.900	-	-	-
Model Based Systems Engineering (MBSE)	Reqn	Various : Kirtland AFB, NM	-	0.128	Feb 2020	0.458	Feb 2021	0.458	Feb 2022	-		0.458	-	-	-
<b>Subtotal</b>			-	0.967		1.858		1.871		-		1.871	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</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>			
EZ A&AS	Various	Various : Kirtland AFB, NM	-	0.431	Feb 2020	0.600	Feb 2021	0.600	Feb 2022	-		0.600	-	-	-
Program Management Support (PMA)	Various	Various : Kirtland AFB, NM	-	0.100	Mar 2020	0.200	Mar 2021	0.200	Mar 2022	-		0.200	-	-	-
<b>Subtotal</b>			-	0.531		0.800		0.800		-		0.800	-	-	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>								<b>Date: May 2021</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> 654236 / <i>Engineering Analysis</i>			
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>		
<b>Project Cost Totals</b>	-	2.335	4.458	4.531	-	4.531	-	-	N/A		

**Remarks**  
 FFRDC Cybersecurity Vulnerability Analysis: FY22 reflects current allocated FY22 Staff Years of Technical Effort (STE) allocations across AFNWC.  
 FFRDC Emulation of the Strategic Missile Integration Complex (SMIC): Increases reflect actuals to continue an accelerated program.  
 Secure Cyber Facility Support increase reflects actuals supporting the stand-up of engineering analysis capabilities within AFNWC/EZ.  
 Mission Support increases reflect additional STE support.  
 Model Based Systems Engineering (MBSE) requirements reflect increased capability.  
 EZ A&AS requirements reflect actuals. The FY22 increase supports increased program requirements supporting establishment of program capabilities across AFNWC/EZ, cybersecurity, and engineering analysis.  
 Program Management Support (PMA) reflects actual FY22 increases as program capabilities increase overall.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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>Engineering &amp; Cyber Security Analysis</b>	
Cyber Security Vulnerability Assessments & Analysis	
Emulation of the SMIC	
Secure Cyber Facility Support	
MBSE	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<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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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Engineering &amp; Cyber Security Analysis</i></b>				
Cyber Security Vulnerability Assessments & Analysis	1	2020	4	2026
Emulation of the SMIC	1	2020	4	2026
Secure Cyber Facility Support	1	2020	4	2026
MBSE	2	2020	4	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
654807: Nuclear Weapon System Technology and Integration	-	0.000	14.639	19.474	0.000	19.474	-	-	-	-	-	-
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 National Command Structure and military warfighter with emphasis placed on 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.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Weapons Effects	0.000	3.706	6.174	0.000	6.174
<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 asses nuclear effects, systems 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 2021 Plans:</b> Development, modernization, verification and validation of M&S tools. Develop rigorous methods and tools for testing and predictive response to nuclear effects. Perform 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 associated Nuclear Command, Control, and Communication (NC3) assets. Develop methods and tools used to assure weapon effectiveness in operationally relevant environments.					
<b>FY 2022 Base Plans:</b> Increased development, modernization, verification and validation of M&S tools. Develop rigorous methods and tools for testing and predictive response to nuclear effects. Increase analysis to establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft,					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p>weapon systems, ICBM, and NC3 assets. Expand development of methods and tools used to assure weapon effectiveness in operationally relevant environments.</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase is due to expanded testing requirements and activities deferred from 2021.</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 systems fragility analyses, 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 modeling and simulation tools to develop mitigation strategies for consideration by program offices. This analysis of various threats to AF nuclear weapons systems is used to inform warfighter concept of operations (CONOPS), modernization activities, and new acquisitions.</p> <p><b>FY 2021 Plans:</b> Assessing strategic system capabilities/vulnerabilities relative to Air-Delivered (AD) nuclear weapon systems, ICBMs, and NC3. Threat evaluations and analyses to address current and future threats that include, but not limited to, kinetic, Electronic Warfare (EW), cyber, supply chain and maintenance/logistics vulnerabilities. Assessments are evaluated using existing weapon/platform pairing with current and emerging threat vectors, as well as proposed modernization requirements. AD, ICBM, and NC3 assessments are used in the development of requirements, CONOPS and Tactics, technics and Procedures (TTPs) for modernization activities, and new acquisitions. These assessments include nuclear weapon systems fragility analyses, Vulnerability Modes &amp; Effects Analysis, M&amp;S and conduct effects testing.</p> <p><b>FY 2022 Base Plans:</b> Expanded assessments of strategic system capabilities/vulnerabilities relative to Air-Delivered (AD) nuclear weapon systems, ICBMs, and NC3. Further threat evaluations and analyses to address current and future threats that include, but not limited to, kinetic, EW, cyber, supply chain and maintenance/logistics vulnerabilities. Assessments are evaluated using existing weapon/platform pairing with current and emerging threat vectors, as well as proposed modernization requirements. AD, ICBM, and NC3 assessments are used in the development of requirements, CONOPS and TTPs for modernization activities, and new acquisitions. These assessments</p>	0.000	10.933	13.300	0.000	13.300

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
include nuclear weapon systems fragility analyses, Vulnerability Modes & Effects Analysis, M&S and conduct effects testing.  <b>FY 2022 OCO Plans:</b> N/A  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase is due to expanded assessments and activities deferred from 2021.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	14.639	19.474	0.000	19.474

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

**Remarks**

**D. Acquisition Strategy**  
Multiple Cost Plus Fixed Fee (CPFF) and/or Time and Material (T&M) and Military Interdepartmental Purchase Requests (MIPR) are/will be used to obtain testing and evaluations, technical analyses and/or technical support 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 2022 Air Force** **Date:** May 2021

<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>
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<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	-	0.000		0.750	Apr 2021	2.598	Nov 2021	0.000		2.598	-	-	-
NWST&I - FFRDC Engineering & Technical Support	MIPR	Aerospace Corp(SMC) : El Segundo, CA	-	0.000		1.416	Jan 2021	2.717	Nov 2021	0.000		2.717	-	-	-
NWST&I - Security Support	MIPR	Various : Kirtland AFB, NM	-	0.000		0.704	Apr 2021	0.768	Dec 2021	0.000		0.768	-	-	-
NWST&I - Program Support	C/CPFF	Booz Allen Hamilton : Kirtland AFB, NM	-	0.000		3.789	Mar 2021	3.989	Feb 2022	0.000		3.989	-	-	-
<b>Subtotal</b>			-	0.000		6.659		10.072		0.000		10.072	-	-	N/A

**Remarks**  
FY21 New Start and reductions required adjustments to cost and schedule to properly phase execution.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 - Weapons Effects Uncertainty Testing	MIPR	Sandia National Labs : Kirtland AFB, NM	-	0.000		1.000	Mar 2021	1.020	Jan 2022	0.000		1.020	-	-	-
NWST&I - AFNRT Assessments 1	MIPR	Sandia National Labs : Various	-	0.000		5.006	Mar 2021	3.766	Dec 2021	0.000		3.766	-	-	-
NWST&I - AFNRT Assessments 2	MIPR	Booz Allen Hamilton : Kirtland AFB, NM	-	0.000		1.400	Mar 2021	2.030	Feb 2022	0.000		2.030	-	-	-
NWST&I - UARC Test & Evaluation	C/CPAF	John Hopkins University : Laurel, MD	-	0.000		-		2.030	Mar 2022	0.000		2.030	-	-	-
<b>Subtotal</b>			-	0.000		7.406		8.846		0.000		8.846	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<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>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			

**Remarks**  
FY21 New Start and reductions required adjustments to cost and schedule to properly phase execution.

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 Program Management Administration (PMA)	Various	Various : Kirtland AFB, NM	-	0.000		0.574	Feb 2021	0.556	Nov 2021	0.000		0.556	-	-	-
<b>Subtotal</b>			-	0.000		0.574		0.556		0.000		0.556	-	-	N/A

**Remarks**  
PMA includes travel, supply and enclave system and communication support

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	0.000	14.639	19.474	0.000	19.474	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</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>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
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>AF Nuclear Red Team</i></b>	
Assessments 1	
Assessments 2	
<b><i>Weapons Effects</i></b>	
Weapons Uncertainty	
Modeling & Simulation	
<b><i>Program Support</i></b>	
Engineering	
Security	
Program Analysis	
PMA	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<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	2	2021	4	2026
Assessments 2	2	2021	4	2026
<b><i>Weapons Effects</i></b>				
Weapons Uncertainty	2	2021	4	2026
Modeling & Simulation	3	2021	4	2026
<b><i>Program Support</i></b>				
Engineering	2	2021	4	2026
Security	3	2021	4	2026
Program Analysis	2	2021	4	2026
PMA	2	2021	4	2026

**Note**

FY21 New Start and reductions required adjustments to cost and schedule to properly phase execution.  
All sub-projects are continuous support/testing to all nuclear weapon systems.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<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			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
655708: Nuclear Weapons Support	-	1.914	6.960	6.045	0.000	6.045	-	-	-	-	-	-
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 such as the MHU-141, MHU-174, MHU-194, MHU-196/204, MHU-83 & MB-4. Any identified capability gaps may result in the design of new system. The review, analysis and potential modification of existing equipment ensures mission generation remains executable.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Nuclear Enterprise Support Equipment	1.914	6.960	6.045	-	6.045
<b>Description:</b> Nuclear Enterprise Support Equipment Review and Design					
<b>FY 2021 Plans:</b> This effort continues the capabilities-based assessment and road-mapping study to determine if a "Family-of-Systems" concept for munitions lift trucks (aka. jammers) can be developed and leveraged to meet the needs of the WGF and our nuclear aircraft and munition weapon systems across the enterprise. A "Family-of-Jammers" can potentially reduce AF life-cycle sustainment and ownership costs, improve mission generation timelines and enhance user safety. This study may include a review of powered aerospace ground equipment (AGE) if time permits.					
FY21 also includes the development, design, and test of a replacement system for MHU-174 aerial stores lift truck used within the WGF that is currently unsupported and obsolete. Efforts for the previously reported eTUG was discontinued after WGF designs no longer required that capability. Budget includes funds for PMA, A&AS, travel, SIPR facility improvements and other equipment required to execute program activities, as well as develop nuclear-related requirements across the nuclear enterprise that impact operations.					
<b>FY 2022 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<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 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p>This effort completes the "Family-of-Jammers" capabilities based assessment &amp; road mapping study. Follow-on studies will leverages data from the jammer study and begins analysis of agile, environmentally friendly universal flightline power generation and/or air conditioner systems to support nuclear enterprise aircraft such as the B-52, B-21, E-8, and other large aircraft, as well as dual-capable aircraft such as the F-35, F-15 and F-16. Efforts may include the limited procurement of commercial off-the-shelf electric (battery) power systems and/or advanced prototype systems to assess military suitability, feasibility, and maintainability of electrified systems in cold, hot and other operational environments. Data will support future requirements documents and concept of operations development.</p> <p>Transitions and continues large munitions lift trailer Small Business Innovative Research (SBIR) efforts from AFGSC. Efforts will continue maturing designs for a new 20k lbs class munitions lift trailer to support current/ emerging weapon systems requirements as well as to support replacement of the current 40k lbs class munitions trailer. Additionally, research and development activities will introduce innovative solutions/systems to improve mission generation timelines, improve user safety and potentially reduce manpower requirements.</p> <p>Continues the development, design, and test of a replacement system for MHU-174 aerial stores lift truck used within the WGF that is currently unsupportable and obsolete.</p> <p>Budget include funds for PMA, A&amp;AS, travel, and other equipment required to execute program activities as well as develop nuclear-related requirements across the nuclear enterprise that impact operations.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funds decrease reflect program schedule and funding requirements.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	1.914	6.960	6.045	-	6.045

<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A
<b>Remarks</b>
<b>D. Acquisition Strategy</b> The acquisition strategy for a replacement to the MHU-174, 7k lbs capacity aerial stores lift truck (Jammer) is open competition, pending industry interest, and likely a small business award.  The 20k lbs jammer design and innovation activity in anticipated to continue with a small business innovative research (SBIR) follow-on contract.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

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

Additional studies, to included limited field/operational suitability studies, will leverage existing studies contracts and will be competitively awarded as appropriate.

Future acquisition strategies for any other developmental efforts identified by on-going capability studies will be identified in appropriate future budget updates, as required.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<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 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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)	C/CPFF	Not specified. : TBD	-	0.489	Sep 2021	5.248	Sep 2021	-		-		-	-	-	-
Contract Award - Aerial Stores Lift Truck (Large Class)	TBD	Not specified. : TBD	-	-		-		1.500	Apr 2022	-		1.500	-	-	-
Contract Award - Electric Flightline Power Systems	TBD	Not specified. : TBD	-	-		-		3.200	Dec 2021	-		3.200	-	-	-
Nuclear Support Equipment Analysis	PO	Not specified. : TBD	-	0.438	Oct 2020	0.300	Jul 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	0.927		5.548		4.700		-		4.700	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	Not specified. : TBD	-	0.850	May 2020	1.382	Dec 2022	1.325	Mar 2022	-		1.325	-	-	-
Government Management Services	Various	Not specified. : TBD	-	0.137	Jan 2020	0.030	May 2021	0.020	Nov 2022	-		0.020	-	-	-
<b>Subtotal</b>			-	0.987		1.412		1.345		-		1.345	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	1.914	6.960	6.045	-	6.045	-	-	N/A

**Remarks**  
 FY21 PB "Facility Support Equipment Analysis" is now called "Nuclear Support Equipment Analysis" to best reflect the effort to study munition trailer and loader "family-of-systems" requirements across the nuclear enterprise, to include WGF, emerging strategic systems and legacy modifications.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<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 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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>																												
Sm/Med Munition Loader Development/ Production/Test																												
Aerial Stores Lift Truck Study																												
Powered Aerospace Ground Equipment Study																												
20-40K lbs Class Munition Loader Development/Test																												
Electrified Flight-line Power Systems Testing																												

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<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>				
Sm/Med Munition Loader Development/Production/Test	4	2021	3	2024
Aerial Stores Lift Truck Study	1	2021	1	2022
Powered Aerospace Ground Equipment Study	4	2021	3	2022
20-40K lbs Class Munition Loader Development/Test	2	2022	4	2023
Electrified Flight-line Power Systems Testing	2	2022	3	2023

**Note**

In FY21, program efforts no longer include development of the eTUG since that capability was removed from the nuclear weapons generation facility (WGF) requirement.

The small/med munitions lift truck is a nuclear certified system required within the WGF facility to support missile operations.