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

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i> | R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i> |
|---|--|

| 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 | - | 24.502 | 30.050 | 64.425 | 0.000 | 64.425 | 39.967 | 40.621 | 43.254 | 45.960 | Continuing | Continuing |
| 654236: <i>Engineering Analysis</i> | - | 4.254 | 4.531 | 0.994 | 0.000 | 0.994 | 4.509 | 2.636 | 2.692 | 2.752 | Continuing | Continuing |
| 654807: <i>Nuclear Weapon System Technology and Integration</i> | - | 14.169 | 19.474 | 61.411 | 0.000 | 61.411 | 33.396 | 35.885 | 38.418 | 41.016 | Continuing | Continuing |
| 655708: <i>Nuclear Weapons Support</i> | - | 6.079 | 6.045 | 2.020 | 0.000 | 2.020 | 2.062 | 2.100 | 2.144 | 2.192 | 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 FY21 \$0M was expended for civilian pay expenses in this program element, and in FY22 \$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. Program Change Summary (\$ in Millions) | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 26.057 | 30.050 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 24.502 | 30.050 | 64.425 | 0.000 | 64.425 |
| Total Adjustments | -1.555 | 0.000 | 64.425 | 0.000 | 64.425 |
| • 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 | -0.635 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.920 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 64.425 | 0.000 | 64.425 |

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.

\$0.635M was transferred from project 655708 in the FY21 Omnibus.

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| Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force | | | | | | | | | | Date: April 2022 | | |
| 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 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 |
| 654236: <i>Engineering Analysis</i> | - | 4.254 | 4.531 | 0.994 | 0.000 | 0.994 | 4.509 | 2.636 | 2.692 | 2.752 | 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.

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

| | FY 2021 | FY 2022 | FY 2023 |
|--|----------------|----------------|----------------|
| Title: Engineering Analysis | 4.254 | 4.531 | 0.994 |
| Description: 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. | | | |
| FY 2022 Plans: 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. | | | |
| FY 2023 Plans: Continue to 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. Add nuclear command, control, and communications (NC3) systems to this effort. | | | |
| FY 2022 to FY 2023 Increase/Decrease Statement: Funding reduced due to reduction in Cybersecurity Vulnerability Analysis work in FY23 and completion of the Aerospace SMIC Emulation effort in FY22. | | | |
| Accomplishments/Planned Programs Subtotals | 4.254 | 4.531 | 0.994 |

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

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 2023 Air Force **Date:** April 2022

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

| Product Development (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | - | 0.600 | Nov 2020 | 0.610 | Nov 2021 | 0.020 | Nov 2022 | - | | 0.020 | Continuing | Continuing | - |
| FFRDC Emulation of the Strategic Missile Integration Complex (SMIC) | MIPR | AEROSPACE : Kirtland AFB, NM | - | 1.200 | Feb 2021 | 1.250 | Apr 2022 | - | | - | | - | 0.000 | 2.450 | - |
| Subtotal | | | - | 1.800 | | 1.860 | | 0.020 | | - | | 0.020 | Continuing | Continuing | N/A |

| Support (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | - | 0.400 | Nov 2020 | 0.513 | Apr 2022 | - | | - | | - | 0.000 | 0.913 | - |
| Mission Support | MIPR | AEROSPACE : Kirtland AFB, NM | - | 0.800 | Feb 2021 | 0.900 | Apr 2022 | 0.114 | Apr 2023 | - | | 0.114 | Continuing | Continuing | - |
| Model Based Systems Engineering (MBSE) | MIPR | AEROSPACE : Kirtland AFB, NM | - | 0.454 | Feb 2021 | 0.458 | Apr 2022 | - | | - | | - | 0.000 | 0.912 | - |
| Digital Systems Engineering | MIPR | Various : Kirtland AFB, NM | - | - | | - | | 0.860 | Jun 2023 | - | | 0.860 | Continuing | Continuing | - |
| Subtotal | | | - | 1.654 | | 1.871 | | 0.974 | | - | | 0.974 | Continuing | Continuing | N/A |

| Management Services (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 A&AS | Various | Various : Kirtland AFB, NM | - | 0.600 | Feb 2021 | 0.600 | Apr 2022 | - | | - | | - | 0.000 | 1.200 | - |
| Program Management Support (PSC) | Various | Various : Kirtland AFB, NM | - | 0.200 | Mar 2021 | 0.200 | Apr 2022 | - | | - | | - | 0.000 | 0.400 | - |

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force **Date:** April 2022

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

| | |
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| Engineering & Cyber Security Analysis | |
| Cyber Security Vulnerability Assessments & Analysis | |
| Emulation of the SMIC | |
| Secure Cyber Facility Support | |
| MBSE & Digital Engineering | |

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force **Date:** April 2022

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

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Engineering & Cyber Security Analysis</i> | | | | |
| Cyber Security Vulnerability Assessments & Analysis | 1 | 2021 | 4 | 2027 |
| Emulation of the SMIC | 1 | 2021 | 4 | 2023 |
| Secure Cyber Facility Support | 1 | 2021 | 4 | 2023 |
| MBSE & Digital Engineering | 2 | 2021 | 4 | 2027 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force | | | | | | | | | | Date: April 2022 | | |
| Appropriation/Budget Activity 3600 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support | | | | Project (Number/Name) 654807 / Nuclear Weapon System Technology and Integration | | | |
| 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 |
| 654807: Nuclear Weapon System Technology and Integration | - | 14.169 | 19.474 | 61.411 | 0.000 | 61.411 | 33.396 | 35.885 | 38.418 | 41.016 | 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 consolidates funding for DoD-required certification for legacy, modernized, and new nuclear weapon systems.

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

| | FY 2021 | FY 2022 | FY 2023 |
|--|----------------|----------------|----------------|
| Title: Weapons Effects | 3.587 | 6.174 | 6.282 |
| Description: 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. | | | |
| FY 2022 Plans: Develop, modernize, and conduct verification and validation of M&S tools and testing methods. Develop rigorous methods and tools for testing and predictive response to nuclear effects. Establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft, weapon systems, Intercontinental Ballistic Missiles (ICBMs), and nuclear command, control, and communications (NC3) assets. Develop methods and tools used to assure weapon effectiveness in operationally relevant environments. Support AF Global Strike Command (AFGSC) through oversight and report standardization of AF aircraft electromagnetic pulse (EMP) threat-level test execution. | | | |
| FY 2023 Plans: Continue to increase development, modernization, verification and validation of M&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, | | | |

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| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i> | Project (Number/Name) 654807 / <i>Nuclear Weapon System Technology and Integration</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2021 | FY 2022 | FY 2023 |
| <p>weapon systems, ICBM, 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>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased due to marginal increase of existing lines of effort and inflation adjustments.</p> | | | | |
| <p>Title: Air Force Nuclear Red Team (AFNRT)</p> <p>Description: 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 & effects analysis, M&S, and effects testing. As part of the effort to assess the vulnerabilities, data is used from various tests and M&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>FY 2022 Plans: Assess strategic system capabilities/vulnerabilities relative to Air-Delivered (AD) nuclear weapon systems, Intercontinental Ballistic Missiles (ICBMs), and Human Factors (HF) related to strategic systems. Evaluate current and future threats that include, but not limited to, kinetic, electronic warfare, cyber, supply chain, maintenance/logistics, and human factor vulnerabilities. Assessments include nuclear weapon systems fragility analysis, vulnerability modes and effects analysis, M&S and combined environment testing. Assessments are evaluated using existing weapon/platform paired with current and emerging threat vectors, as well as proposed modernization requirements. AD, ICBM, and HF assessments are used in the development of requirements, CONOPS, and tactics, techniques, and procedures (TTPs) for modernization activities and new acquisitions.</p> <p>FY 2023 Plans: Continue expanded 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 human factor vulnerabilities. Assessments will include nuclear weapon system fragility analysis, vulnerability modes and effects analysis, M&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.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> | | 10.582 | 13.300 | 13.537 |

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| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2021 | FY 2022 | FY 2023 |
| Funding increased due to marginal increase of existing lines of effort and inflation adjustments. | | | | |
| <p>Title: Nuclear Certification Management</p> <p>Description: 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 nuclear enterprise-wide, and required for the independent analysis roles, responsibilities, and authorities (RRA) directed by statutory (USC) and regulatory (DoDM and AFI) for the AFNWC; it is distinct from, but complemented by the funding identified by specific nuclear weapons programs (e.g., B-21, Ground Based Strategic Deterrent (GBSD), F-35A, F-15E, etc.) for their RRA 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 Offices) 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 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, and 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>FY 2022 Plans: N/A</p> <p>FY 2023 Plans: Invest in the Next-Generation AMAC Tester (NGAT) 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 NGAT, 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, GBSD, B-52H, modernized ICBM fuze, and seven Weapon Generation</p> | | 0.000 | 0.000 | 41.592 |

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| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2021 | FY 2022 | FY 2023 |
| <p>Facilities. Support DoD-requested capability growth for the NCAT analysis tool to optimize resource loading and program deconfliction.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding increased to account for escalation in certification activity required to support and maintain schedule for all nuclear modernization programs that require nuclear certification, to include SECDEF-directed B-21 acceleration of nuclear delivery capability, LRSO schedule adjustments, and four simultaneous (vice serial) major modifications to the B-52H. Additionally, funding increased due to consolidation of nuclear certification management activities within this program element, under project 654236, Engineering Analysis, to this project as well as funding previously provided through the individual new/modified weapon systems that require nuclear certification.</p> | | | | |
| Accomplishments/Planned Programs Subtotals | | 14.169 | 19.474 | 61.411 |
| C. Other Program Funding Summary (\$ in Millions) | | | | |
| N/A | | | | |
| Remarks | | | | |
| D. Acquisition Strategy | | | | |
| <p>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.</p> | | | | |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

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| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i> | Project (Number/Name) 654807 / <i>Nuclear Weapon System Technology and Integration</i> |
|--|--|--|

| Support (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 Total | | | |
|---|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| NWST&I - Modeling & Simulation | C/CPFF | Peerless Technology Corp : Kirtland AFB, NM, NM | - | 1.349 | Apr 2021 | 2.182 | Nov 2021 | 2.500 | Nov 2022 | - | | 2.500 | Continuing | Continuing | - |
| NWST&I - FFRDC Engineering & Technical Support | MIPR | Aerospace Corp(SMC) : El Segundo, CA | - | 1.416 | Mar 2021 | 1.463 | Nov 2021 | 4.650 | Nov 2022 | - | | 4.650 | Continuing | Continuing | - |
| NWST&I - Security Support | MIPR | Various : Kirtland AFB, NM | - | 1.187 | Apr 2021 | 0.768 | Dec 2021 | 0.768 | Dec 2022 | - | | 0.768 | Continuing | Continuing | - |
| NWST&I - Program Support | C/CPFF | Booz Allen Hamilton : Kirtland AFB, NM | - | 3.768 | Mar 2021 | 3.430 | Feb 2022 | 3.498 | Dec 2022 | - | | 3.498 | Continuing | Continuing | - |
| NWS&I - Nuclear Certification Engineering Support | C/CPFF | Booz Allen Hamilton : Kirtland AFB, NM | - | - | | - | | 38.055 | Mar 2023 | - | | 38.055 | Continuing | Continuing | - |
| Subtotal | | | - | 7.720 | | 7.843 | | 49.471 | | - | | 49.471 | Continuing | Continuing | N/A |

| Test and Evaluation (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 Total | | | |
|--|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| NWST&I - Weapons Effects Uncertainty Testing | MIPR | Sandia National Labs : Kirtland AFB, NM | - | 1.000 | Mar 2021 | 2.000 | Jan 2022 | 2.000 | Dec 2022 | - | | 2.000 | Continuing | Continuing | - |
| NWST&I - AFNRT Assessments 1 | MIPR | Sandia National Labs : Various | - | 3.765 | Mar 2021 | 7.312 | Dec 2021 | 7.441 | Dec 2022 | - | | 7.441 | Continuing | Continuing | - |
| NWST&I - AFNRT Assessments 2 | C/CPFF | Booz Allen Hamilton : Kirtland AFB, NM | - | 1.344 | Mar 2021 | 1.400 | Feb 2022 | 1.400 | Dec 2022 | - | | 1.400 | Continuing | Continuing | - |
| Subtotal | | | - | 6.109 | | 10.712 | | 10.841 | | - | | 10.841 | Continuing | Continuing | N/A |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

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| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support | Project (Number/Name) 654807 / Nuclear Weapon System Technology and Integration |
|--|---|---|

| Management Services (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | - | 0.340 | Sep 2021 | 0.919 | Nov 2021 | 1.099 | Mar 2023 | - | | 1.099 | Continuing | Continuing | - |
| Subtotal | | | - | 0.340 | | 0.919 | | 1.099 | | - | | 1.099 | Continuing | Continuing | N/A |

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

| | Prior Years | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | - | 14.169 | 19.474 | 61.411 | - | 61.411 | Continuing | Continuing | N/A |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force | | Date: April 2022 |
| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i> | Project (Number/Name) 654807 / <i>Nuclear Weapon System Technology and Integration</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>AF Nuclear Red Team</i> | |
| Assessments 1 | |
| Assessments 2 | |
| <i>Weapons Effects</i> | |
| Weapons Uncertainty | |
| Modeling & Simulation | |
| <i>Nuclear Certification</i> | |
| Engineering Support | |
| <i>Program Support</i> | |
| Engineering | |
| Security | |
| Program Analysis | |
| PMA | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force | | Date: April 2022 |
| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0604222F / <i>Nuclear Weapons Support</i> | Project (Number/Name) 654807 / <i>Nuclear Weapon System Technology and Integration</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|-------------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>AF Nuclear Red Team</i> | | | | |
| Assessments 1 | 2 | 2021 | 4 | 2027 |
| Assessments 2 | 2 | 2021 | 4 | 2027 |
| <i>Weapons Effects</i> | | | | |
| Weapons Uncertainty | 2 | 2021 | 4 | 2027 |
| Modeling & Simulation | 3 | 2021 | 4 | 2027 |
| <i>Nuclear Certification</i> | | | | |
| Engineering Support | 2 | 2022 | 4 | 2027 |
| <i>Program Support</i> | | | | |
| Engineering | 2 | 2021 | 4 | 2027 |
| Security | 3 | 2021 | 4 | 2027 |
| Program Analysis | 2 | 2021 | 4 | 2027 |
| PMA | 4 | 2021 | 4 | 2027 |

Note
 FY22 Will include re-phasing on multiple efforts to better align execution.
 FY23 Increase due to funding being added to baseline to support nuclear certification efforts
 All sub-projects are continuous support/testing to all nuclear weapon systems.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force | | | | | | | | | | Date: April 2022 | | |
| Appropriation/Budget Activity 3600 / 5 | | | | | R-1 Program Element (Number/Name) PE 0604222F / Nuclear Weapons Support | | | | Project (Number/Name) 655708 / Nuclear Weapons Support | | | |
| 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 |
| 655708: Nuclear Weapons Support | - | 6.079 | 6.045 | 2.020 | 0.000 | 2.020 | 2.062 | 2.100 | 2.144 | 2.192 | 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 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 systems. The review, analysis and potential modification of existing equipment ensures mission generation remains executable.

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

| | | | |
|---|----------------|----------------|----------------|
| | FY 2021 | FY 2022 | FY 2023 |
| Title: Nuclear Enterprise Support Equipment | 6.079 | 6.045 | 2.020 |
| Description: Nuclear Enterprise Support Equipment Review and Design | | | |
| FY 2022 Plans: This effort completes the "Family-of-Jammers" capabilities based assessment & road-mapping study. Continue to develop and test a replacement system for the MHU-174 aerial stores lift truck used within the WGF that is currently unsupported and obsolete. Continue to mature designs for large munitions lift trailers (20K & 40K class) required by AFGSC. Continue studies 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, as well as dual-capable aircraft such as the F-35A, F-15E and F-16. These efforts support weapons system requirements documents and concept of operations. 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 all operational environments. | | | |
| FY 2023 Plans: Studies and analyses from previous efforts in this program will be 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 will support engineering associated with requirements definition, technology maturation, and risk reduction | | | |

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|---|-------------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force | Date: April 2022 |
|---|-------------------------|

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

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2021 | FY 2022 | FY 2023 |
|--|---------|---------|---------|
| needed to develop solutions to deliver prototypes which meet the evolving requirements of AFGSC for next-generation Common Aviation Support Equipment (CAvSE). | | | |
| <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding decreased due to delays in obligating funds resulting from a lack of rapid acquisition pathfinders. For RDT&E efforts, a modernization team was established for FY22 to execute funds and meet OSD goals. | | | |
| Accomplishments/Planned Programs Subtotals | 6.079 | 6.045 | 2.020 |

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

Remarks

D. Acquisition Strategy

1. The acquisition strategy for the Small Agile Lift Truck (SALT) is for MilTech, via a Partnership Intermediary Agreement, to engage and support industry partners, Manufacturing Extension Partnerships (MEP), and Subject Matter Experts on the development and delivery of two SALT demonstration prototypes.
2. The acquisition strategy for the MHU-TSX/M is for Air Force Global Strike Command to work with Square One Corporation to design, fabricate, and test an advanced robotic munitions loader for large aircraft.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

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

| Product Development (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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) | RO | AFRL/MilTech : Boseman, MT | - | - | | 3.015 | May 2022 | - | | - | | - | 0.000 | 3.015 | - |
| Contract Award - Aerial Stores Lift Truck (Large Class) | RO | AF Global Strike Cmd : Barksdale AFB, LA | - | - | | 1.910 | May 2022 | - | | - | | - | 0.000 | 1.910 | - |
| Contact Award - Electric Flightline Power Systems | TBD | TBD : TBD | - | - | | - | | 0.520 | Apr 2023 | - | | 0.520 | 0.000 | 0.520 | - |
| Nuclear Support Equipment Analysis | PO | WBB Inc/SERCO : Warner Robins, GA | - | 0.309 | Aug 2021 | - | | - | | - | | - | 0.000 | 0.309 | - |
| GPS Nav Systems (AFNWC/WNY) | MIPR | Northrop Grumman : W. Falls Church, VA | - | 4.270 | Dec 2021 | - | | - | | - | | - | 0.000 | 4.270 | - |
| Subtotal | | | - | 4.579 | | 4.925 | | 0.520 | | - | | 0.520 | 0.000 | 10.024 | N/A |

| Support (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | - | 0.500 | Sep 2021 | 0.870 | Mar 2022 | 1.500 | Jan 2024 | - | | 1.500 | Continuing | Continuing | - |
| Government Management Services | Various | SERCO : Herndon, VA | - | 1.000 | Mar 2022 | 0.250 | Sep 2022 | - | | - | | - | 0.000 | 1.250 | - |
| Subtotal | | | - | 1.500 | | 1.120 | | 1.500 | | - | | 1.500 | Continuing | Continuing | N/A |

| Project Cost Totals | Prior Years | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| | - | 6.079 | 6.045 | 2.020 | - | 2.020 | Continuing | Continuing | N/A |

Remarks
Due to a lack of rapid acquisition pathfinders to support this project, funds were realigned to support AFNWC/WNY (electronic warfare).

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force **Date:** April 2022

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

| | FY 2021 | | | | FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | |
|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|
| <i>Nuclear Enterprise Support Equipment</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Small Agile Lift Truck (SALT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Large Nuclear Munitions Trailer (LNMT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multi-capable Trailer (MCT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electric Tug (ETUG) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WGF Jammer (MHU-174X) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electric Ground Power Unit (EGPU) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Next Gen Air Pallet (NGAP) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force **Date:** April 2022

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

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>Nuclear Enterprise Support Equipment</i> | | | | |
| Small Agile Lift Truck (SALT) | 2 | 2022 | 3 | 2023 |
| Large Nuclear Munitions Trailer (LNMT) | 3 | 2022 | 3 | 2023 |
| Multi-capable Trailer (MCT) | 3 | 2022 | 3 | 2023 |
| Electric Tug (ETUG) | 4 | 2022 | 4 | 2023 |
| WGF Jammer (MHU-174X) | 1 | 2023 | 1 | 2024 |
| Electric Ground Power Unit (EGPU) | 2 | 2023 | 2 | 2024 |
| Next Gen Air Pallet (NGAP) | 4 | 2023 | 4 | 2024 |

Note

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