| Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency | Date: April 2022 |
|---|---|
| **Appropriation/Budget Activity**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)* | **R-1 Program Element (Number/Name)**<br>PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development* |

| 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 | 9.870 | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 | 13.414 | 13.381 | 13.649 | 13.922 | Continuing | Continuing |
| RD: *Nuclear Technologies and Capabilities Development* | 9.870 | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 | 13.414 | 13.381 | 13.649 | 13.922 | Continuing | Continuing |

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

The Counter Weapons of Mass Destruction (CWMD) Systems Development program element supports the development and demonstration of technologies and systems for the CWMD mission, including modeling and simulation (M&S) capabilities, verification and monitoring technologies, and decision support systems.

| B. Program Change Summary ($ in Millions) | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 15.650 | 14.063 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 |
| Total Adjustments | -0.400 | 0.000 | 14.403 | 0.000 | 14.403 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -0.400 | - | | | |
| • Adjustments to Budget Year | - | - | 14.403 | 0.000 | 14.403 |

**Change Summary Explanation**

FY 2023 funds increase because the FY 2022 President’s Budget request did not include out-year funding.

| Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency | | | Date: April 2022 |
|---|---|---|---|
| Appropriation/Budget Activity<br>0400 / 5 | R-1 Program Element (Number/Name)<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | Project (Number/Name)<br>RD / *Nuclear Technologies and Capabilities Development* | |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RD: *Nuclear Technologies and Capabilities Development* | 9.870 | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 | 13.414 | 13.381 | 13.649 | 13.922 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

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

This project supports the development of capabilities for the Defense Threat Reduction Agency (DTRA) to counter proliferation and weapons of mass destruction (WMD) and to model the consequences of the use of nuclear weapons and integrate these capabilities for Combatant Command use.

DTRA's Enhanced Consequence Analysis (ECA) program performs research and development to improve the reliability and effectiveness of capabilities related to the consequence of execution of a nuclear weapon. This program delivers nuclear weapon effects (NWE) decision support tools for use during strategic and operational planning. The ECA program directly supports U.S. and allied warfighter planning requirements, including the Integrated Strategic Planning and Analysis Network Increment 5 (ISPAN Inc 5), an acquisition category (ACAT) 1A Major Automated Information System (MAIS) that supports developing nuclear and conventional force application plans.

DTRA's Nuclear Arms Control Technologies (NACT) program performs research and development to improve the sustainability, reliability, and effectiveness of capabilities related to its operational mission to install, operate, maintain, and sustain the waveform and radionuclide nuclear detonation detection stations and a radionuclide analysis laboratory comprising the majority of the U.S. portion of the International Monitoring System (IMS). This system delivers data continuously to the U.S. monitoring and verification community supporting warfighter and interagency nuclear-event response in support of the U.S. and Department of Defense (DoD). The NACT program directly supports U.S. and allied warfighter and national technical monitoring requirements and provides vital data used by the treaty monitoring community, warfighter planners, DoD, other U.S. Government agencies, and international agencies.

The Nuclear Capabilities Services (NuCS) program performs RDT&E to improve capabilities to model nuclear weapon effects (NWE) environments and simulate the response of systems and networks to these effects. Starting with NWE modeling & simulation (M&S) capabilities rooted in the DoD nuclear testing program, NuCS augments these legacy codes through integration of higher-fidelity reduced-order models built by DTRA applied research efforts that combine first-principle science & technology M&S and experimental research. Through technology updates to legacy codes and integration of new models, NuCS provide a standard source of NWE M&S capabilities for all DoD users. The Enhanced Consequence Analysis (ECA) program integrates NuCS capabilities and these M&S capabilities with operational databases and systems and works with end-users to provide a user experience specifically designed for nuclear planning. Together, these programs support United States and allied planning and decision making in the event of nuclear weapon use.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|---|---|---|---|---|
| ***Title:*** RD - Nuclear Technologies and Capabilities Development | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 |

| Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|---|---|---|---|---|
| ***Description:*** Project RD supports the NuCS, NACT, and ECA programs, conducting RDT&E to support U.S. and allied nuclear planning and decision-making requirements.<br><br>***FY 2022 Plans:***<br>- Improve and expand the NWE M&S capabilities available to be integrated in the NuCS and ECA programs for delivery to end-user programs.<br>- Demonstrate newly-integrated NWE M&S capabilities and establish priorities for improving and delivering these capabilities through early user assessment engagements with end-users.<br>- Continue to integrate improved NWE M&S capabilities into U.S. and allied planning and decision support systems in support of DoD nuclear planning requirements.<br>- Conduct Research and Development in support of U.S. IMS sites globally.<br>- Provide upgrades to U.S. IMS sites globally, as required.<br>***FY 2023 Base Plans:***<br>Nuclear Signature Monitoring – Signature Evaluation:<br>- Develop geographically expanded monitoring capability and algorithms for detection of new threats, Conventional-Nuclear Integration (CNI), and verification of covert nuclear signatures.<br>- Integrate nuclear and radionuclide data into Chemical, Biological, Radiological, Nuclear, and High-yield Explosives (CBRNE) Consequence Management Response Force (CCMRF) Exercises to provide realistic scenarios for emergency response to nuclear events.<br>- Characterize waveform signals from Cooperative Threat Reduction leveraged large-scale high-explosive tests at Soviet test sites to reduce uncertainty in nuclear effects models.<br><br>International Monitoring System (IMS) - Signature Exploitation / Dual Use:<br>- Expand digitization of nuclear testing data to other test sites and integrate into Waveforms From Nuclear Explosions (WFNE) to reduce uncertainty in nuclear effect models.<br>- Improve and reduce uncertainty of infrasound propagation models for both IMS and other strategic DoD missions.<br>- Expand characterization of waveform signals application to military mission and reduce uncertainty in nuclear effects models through detailed analysis of high-explosive coupling experiments.<br><br>Nuclear Signature Monitoring - Signature Availability/System Performance: | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|---|---|---|---|---|
| - Design the 32nd of 32 US IMS stations to demonstrate U.S. commitment and keep pace with other State Signatories' installation of 300 out of 321 (93%) stations.<br>- Design the next-generation particulate monitoring station for dual-use to support both IMS and other strategic DoD missions.<br>- Increase nuclear and radionuclide data provided from existing networks and sensors through the DTRA Joint Operations Center (JOC) to support Combatant Commands (CCMDs).<br>***FY 2023 OCO Plans:***<br>N/A<br>***FY 2022 to FY 2023 Increase/Decrease Statement:***<br>The increase from FY 2022 to FY 2023 is due to inflation. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 15.250 | 14.063 | 14.403 | 0.000 | 14.403 |

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

| Line Item | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • 25/0602718BR/RD: *Counter Weapons of Mass Destruction Applied Research* | 83.538 | 101.229 | 106.095 | 0.000 | 106.095 | 110.854 | 112.082 | 114.321 | 111.359 | Continuing | Continuing |
| • 34/0603160BR/RD: *Counter Weapons of Mass Destruction Advanced Technology Development* | 46.587 | 54.417 | 60.249 | 0.000 | 60.249 | 59.722 | 61.765 | 62.800 | 63.855 | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

Assess government, academic, and industrial performers and make selections based upon a "best fit for task" criteria. Common government awardees include DoD Service Laboratories and the Department of Energy National Laboratories.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Enhanced Consequence Analysis (ECA) capability development | C/CPFF | Booz Allen Hamilton : McLean, VA | 2.555 | 0.000 | | 2.100 | Nov 2021 | 1.970 | Mar 2023 | 0.000 | | 1.970 | Continuing | Continuing | - |
| Nuclear Capabilities Service (NuCS) nuclear weapon effects models and integration development | C/CPFF | Applied Research Associates : Raleigh, NC | 0.000 | 0.000 | | 0.300 | Nov 2021 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Nuclear Capabilities Service (NuCS) nuclear weapon effects models and integration development | TBD | TBD : TBD | 0.000 | 0.000 | | 1.100 | Mar 2022 | 1.535 | Mar 2023 | 0.000 | | 1.535 | Continuing | Continuing | - |
| | | **Subtotal** | 2.555 | 0.000 | | 3.500 | | 3.505 | | 0.000 | | 3.505 | Continuing | Continuing | N/A |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radionuclide sensor, station, laboratory and network improvements | FFRDC | Pacific Northwest National Laboratory : Richland, WA | 1.550 | 1.212 | Jan 2021 | 1.236 | Jan 2022 | 1.785 | Jan 2023 | 0.000 | | 1.785 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing | FFRDC | Sandia National Laboratory : Albuquerque, NM | 1.850 | 1.244 | Jan 2021 | 1.377 | Jan 2022 | 1.589 | Jan 2023 | 0.000 | | 1.589 | Continuing | Continuing | - |
| Radionuclide sensor, station, and network Improvements | MIPR | Air Force Technical Application Center : Patrick AFB, FL | 0.500 | 0.390 | Feb 2021 | 0.398 | Feb 2022 | 0.350 | Jan 2023 | 0.000 | | 0.350 | Continuing | Continuing | - |
| Radionuclide sensor, station, laboratory and network improvements | C/CPFF | General Dynamics Mission Systems, Inc. : Fairfax, VA | 0.435 | 0.446 | Nov 2020 | 0.455 | Nov 2021 | 0.750 | Nov 2022 | 0.000 | | 0.750 | Continuing | Continuing | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency | | | Date: April 2022 |
|---|---|---|---|
| Appropriation/Budget Activity<br>0400 / 5 | R-1 Program Element (Number/Name)<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | Project (Number/Name)<br>RD / *Nuclear Technologies and Capabilities Development* | |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station, and network Improvements | C/CPFF | Leidos Innovations Corp : Alexandria, VA | 0.200 | 0.240 | Nov 2020 | 0.245 | Nov 2021 | 0.250 | Mar 2023 | 0.000 | | 0.250 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements | C/CPFF | Pennsylvania State University : State College, PA | 0.400 | 0.450 | Jan 2021 | 0.459 | Jan 2022 | 0.275 | Feb 2023 | 0.000 | | 0.275 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing | C/CPFF | University of Alaska Fairbanks : Fairbanks, AK | 0.143 | 0.000 | | 0.000 | | 0.395 | Mar 2023 | 0.000 | | 0.395 | Continuing | Continuing | - |
| Integrated Munitions Effects Assessment Software Development | C/CPFF | Applied Research Associates, Inc : Alexandria, VA | 0.200 | 0.200 | Feb 2021 | 0.204 | Feb 2022 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.604 | - |
| Radionuclide sensor, station, laboratory and network improvements | FFRDC | Argonne National Laboratory : Argonne, IL | 0.200 | 0.000 | | 0.000 | | 0.602 | Mar 2023 | 0.000 | | 0.602 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing | C/TBD | TBD : TBD | 0.160 | 0.500 | Mar 2021 | 0.510 | Mar 2022 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements | MIPR | US Army Corps of Engineers : Vicksburg, MS | 0.100 | 0.300 | Jan 2021 | 0.306 | Jan 2022 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements | MIPR | Missile Defense Agency : Fort Belvoir, VA | 0.650 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements | MIPR | Geophysical Detection for Non-Proliferation University Affiliated Research Center, University of Alaska : Fairbanks, AK | 0.500 | 0.206 | Feb 2021 | 0.510 | Feb 2022 | 0.695 | Feb 2023 | 0.000 | | 0.695 | Continuing | Continuing | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radionuclide sensor, station, and network Improvements | FFRDC | Savanah River National Laboratory : Savannah River Site Aiken, SC | 0.404 | 0.750 | Mar 2021 | 0.765 | Mar 2022 | 0.300 | Mar 2023 | 0.000 | | 0.300 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements | MIPR | DIA/MSIC : TBD | 0.000 | 0.250 | Mar 2021 | 0.255 | Mar 2022 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing | FFRDC | Lawrence Livermore National Laboratory : Livermore, CA | 0.000 | 0.950 | Jan 2021 | 0.969 | Jan 2022 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Radionuclide sensor, station, and network Improvements | C/CPFF | Draper : Cambridge, MA | 0.000 | 3.000 | Jul 2021 | 0.000 | | 0.300 | Jan 2023 | 0.000 | | 0.300 | Continuing | Continuing | - |
| Enhanced consequence analysis initial capability | C/CPFF | TBD : TBD | 0.000 | 5.000 | Jul 2021 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing | C/CPFF | National Nuclear Center of Kazakhstan : Kazakhstan | 0.000 | 0.000 | | 0.000 | Dec 2021 | 0.550 | Dec 2022 | 0.000 | | 0.550 | Continuing | Continuing | - |
| Applied Research Associates : Albuquerque, NM | C/CPFF | Applied Research Associates : Albuquerque, NM | 0.000 | 0.000 | | 0.000 | | 0.450 | Dec 2022 | 0.000 | | 0.450 | Continuing | Continuing | - |
| | | **Subtotal** | 7.292 | 15.138 | | 7.689 | | 8.291 | | 0.000 | | 8.291 | Continuing | Continuing | N/A |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Enhanced Consequence Analysis (ECA) T&E | C/CPFF | Booz Allen Hamilton : McLean, VA | 0.000 | 0.000 | | 1.200 | Nov 2021 | 1.020 | Mar 2023 | 0.000 | | 1.020 | Continuing | Continuing | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NuCS T&E | C/CPFF | Applied Research Associates : Raleigh, NC | 0.000 | 0.000 | | 0.500 | Nov 2021 | 0.000 | Mar 2023 | 0.000 | | 0.000 | Continuing | Continuing | - |
| NuCS T&E | TBD | TBD : TBD | 0.000 | 0.000 | | 1.060 | Mar 2022 | 1.475 | Mar 2023 | 0.000 | | 1.475 | Continuing | Continuing | - |
| | | **Subtotal** | 0.000 | 0.000 | | 2.760 | | 2.495 | | 0.000 | | 2.495 | Continuing | Continuing | N/A |

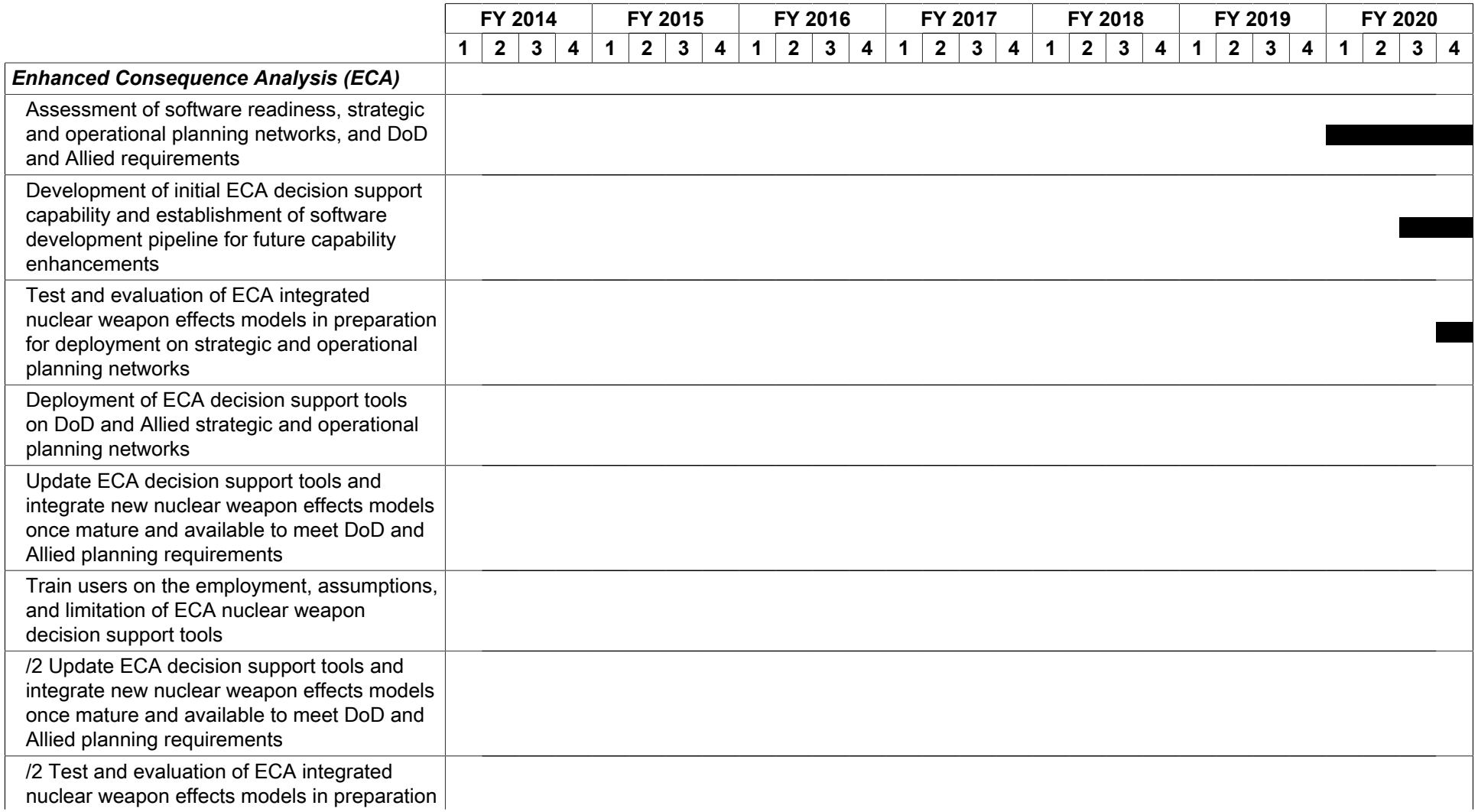
**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2021 Cost | FY 2021 Award Date | FY 2022 Cost | FY 2022 Award Date | FY 2023 Base Cost | FY 2023 Base Award Date | FY 2023 OCO Cost | FY 2023 OCO Award Date | FY 2023 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Travel | Reqn | Various : Various | 0.023 | 0.112 | Nov 2020 | 0.114 | Nov 2021 | 0.112 | Nov 2022 | 0.000 | | 0.112 | Continuing | Continuing | - |
| | | **Subtotal** | 0.023 | 0.112 | | 0.114 | | 0.112 | | 0.000 | | 0.112 | Continuing | Continuing | N/A |

| | 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** | 9.870 | 15.250 | | 14.063 | | 14.403 | | 0.000 | | 14.403 | Continuing | Continuing | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |



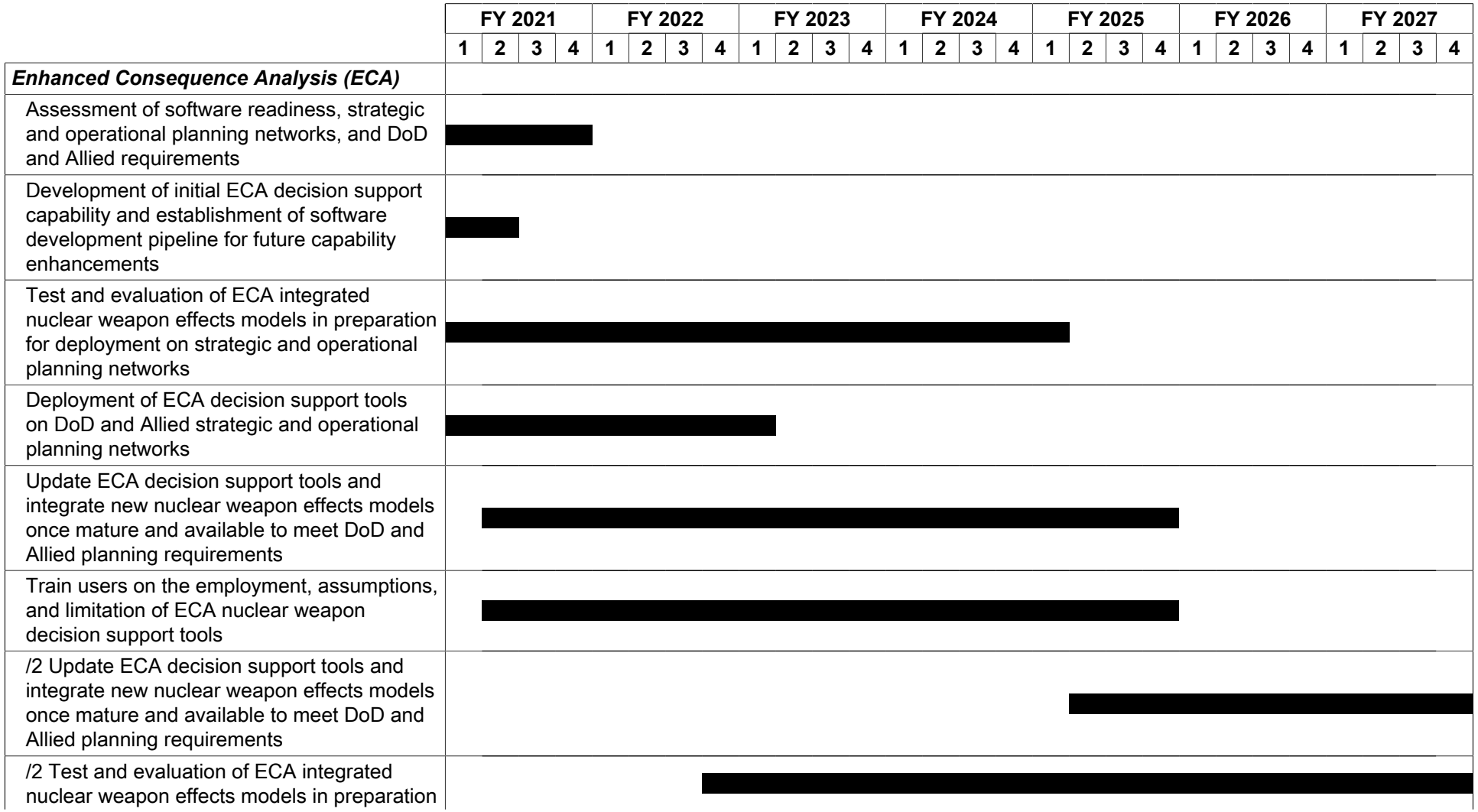
| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

| | FY 2014 | | | | FY 2015 | | | | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 |
| for deployment on strategic and operational planning networks | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| /2 Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Nuclear Capabilities Services (NuCS)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Release initial cloud-compatible capabilities | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and deliver capabilities planned for 2022 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate modeling and simulation capabilities and enable early user assessment for 2022 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing, verification, and validation activities and documentation development for 2022 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop training materials for 2022 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and deliver capabilities planned for 2023 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate modeling and simulation capabilities and enable early user assessment for 2023 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing, verification, and validation activities and documentation development for 2023 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and deliver capabilities planned for 2026 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

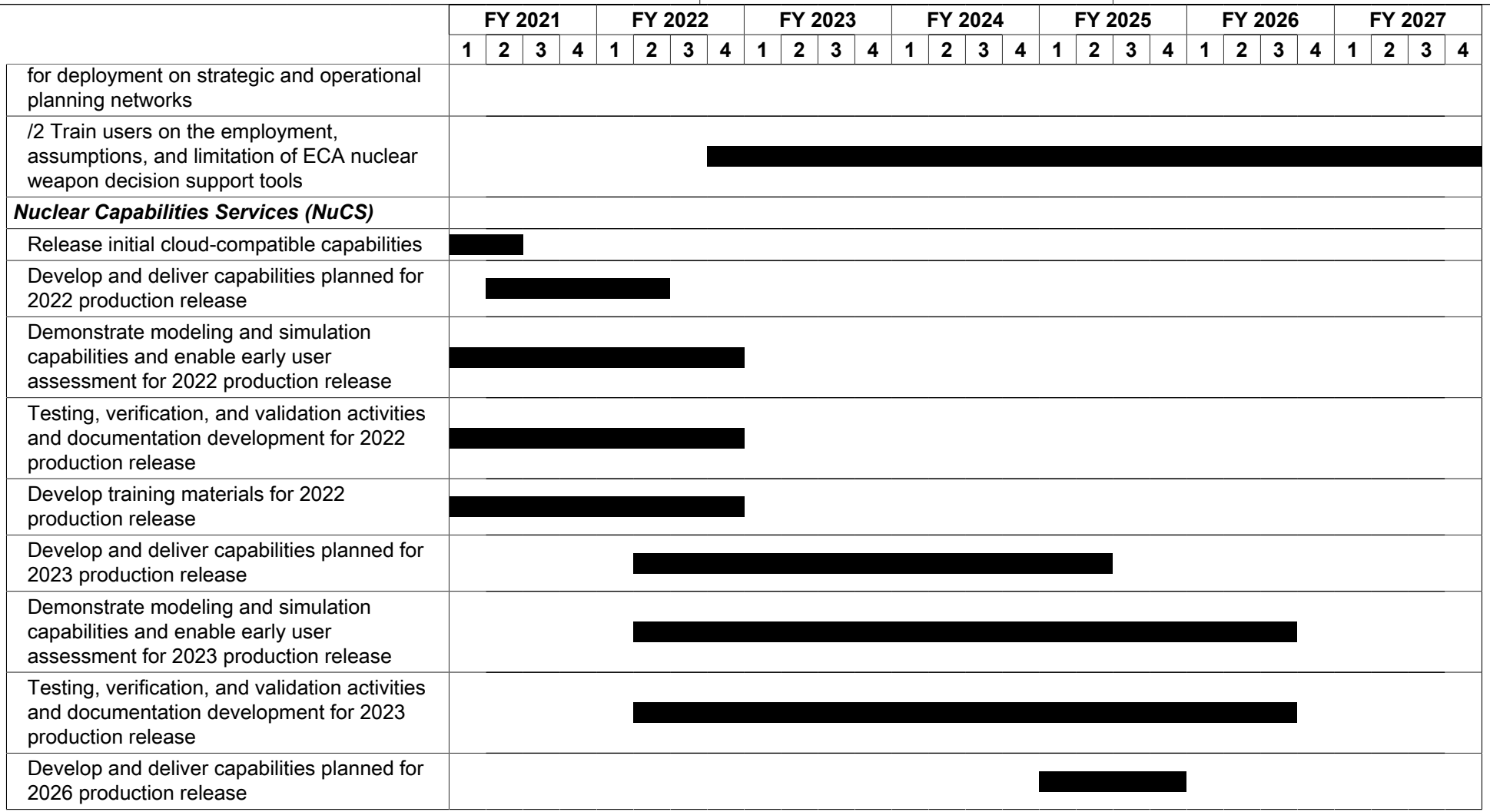
| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

| | FY 2014 | | | | FY 2015 | | | | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing, verification, and validation activities and documentation development for NuCS 2026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Integrate NuCS 2026 into operational systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and deliver capabilities planned for 2027 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2027 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing, verification, and validation activities and documentation development for NuCS 2027 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Integrate NuCS 2027 into operational systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and deliver capabilities planned for 2028 production release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2028 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing, verification, and validation activities and documentation development for NuCS 2028 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Update and deliver training on released capabilities | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

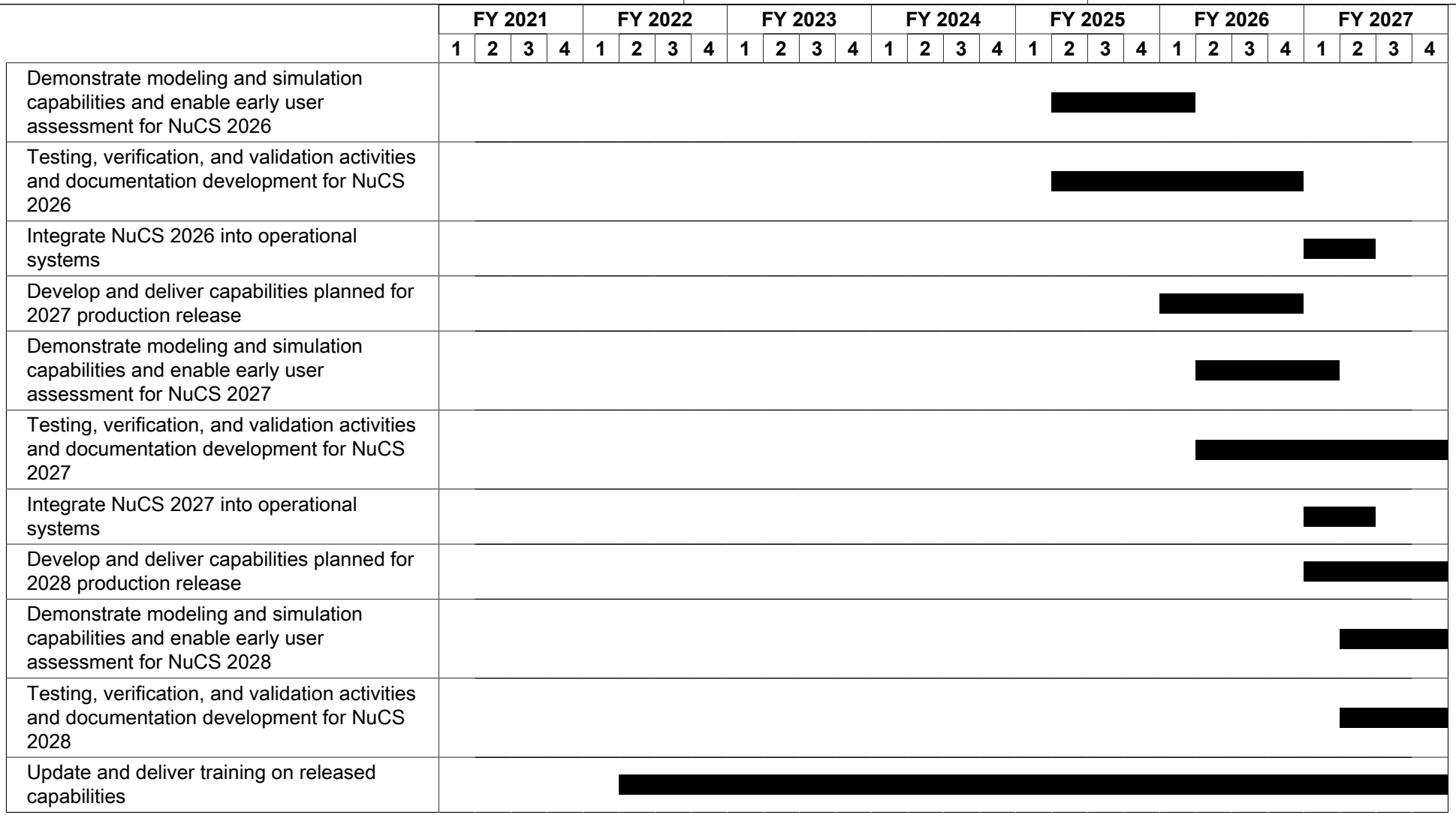
| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |



| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |



| Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Enhanced Consequence Analysis (ECA)*** | | | | |
| Assessment of software readiness, strategic and operational planning networks, and DoD and Allied requirements | 1 | 2020 | 4 | 2021 |
| Development of initial ECA decision support capability and establishment of software development pipeline for future capability enhancements | 3 | 2020 | 2 | 2021 |
| Test and evaluation of ECA integrated nuclear weapon effects models in preparation for deployment on strategic and operational planning networks | 4 | 2020 | 1 | 2025 |
| Deployment of ECA decision support tools on DoD and Allied strategic and operational planning networks | 1 | 2021 | 1 | 2023 |
| Update ECA decision support tools and integrate new nuclear weapon effects models once mature and available to meet DoD and Allied planning requirements | 2 | 2021 | 4 | 2025 |
| Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools | 2 | 2021 | 4 | 2025 |
| /2 Update ECA decision support tools and integrate new nuclear weapon effects models once mature and available to meet DoD and Allied planning requirements | 2 | 2025 | 4 | 2027 |
| /2 Test and evaluation of ECA integrated nuclear weapon effects models in preparation for deployment on strategic and operational planning networks | 4 | 2022 | 4 | 2027 |
| /2 Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools | 4 | 2022 | 4 | 2027 |
| ***Nuclear Capabilities Services (NuCS)*** | | | | |
| Release initial cloud-compatible capabilities | 1 | 2021 | 2 | 2021 |
| Develop and deliver capabilities planned for 2022 production release | 2 | 2021 | 2 | 2022 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for 2022 production release | 1 | 2021 | 4 | 2022 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2023 Defense Threat Reduction Agency | | Date: April 2022 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 5 | **R-1 Program Element (Number/Name)**<br>PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development* | **Project (Number/Name)**<br>RD / *Nuclear Technologies and Capabilities Development* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Testing, verification, and validation activities and documentation development for 2022 production release | 1 | 2021 | 4 | 2022 |
| Develop training materials for 2022 production release | 1 | 2021 | 4 | 2022 |
| Develop and deliver capabilities planned for 2023 production release | 2 | 2022 | 2 | 2025 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for 2023 production release | 2 | 2022 | 3 | 2026 |
| Testing, verification, and validation activities and documentation development for 2023 production release | 2 | 2022 | 3 | 2026 |
| Develop and deliver capabilities planned for 2026 production release | 1 | 2025 | 4 | 2025 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2026 | 2 | 2025 | 1 | 2026 |
| Testing, verification, and validation activities and documentation development for NuCS 2026 | 2 | 2025 | 4 | 2026 |
| Integrate NuCS 2026 into operational systems | 1 | 2027 | 2 | 2027 |
| Develop and deliver capabilities planned for 2027 production release | 1 | 2026 | 4 | 2026 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2027 | 2 | 2026 | 1 | 2027 |
| Testing, verification, and validation activities and documentation development for NuCS 2027 | 2 | 2026 | 4 | 2027 |
| Integrate NuCS 2027 into operational systems | 1 | 2027 | 2 | 2027 |
| Develop and deliver capabilities planned for 2028 production release | 1 | 2027 | 4 | 2027 |
| Demonstrate modeling and simulation capabilities and enable early user assessment for NuCS 2028 | 2 | 2027 | 4 | 2027 |
| Testing, verification, and validation activities and documentation development for NuCS 2028 | 2 | 2027 | 4 | 2027 |
| Update and deliver training on released capabilities | 2 | 2022 | 4 | 2027 |