Department of Defense
Fiscal Year (FY) 2023 Budget Estimates

April 2022

Defense Threat Reduction Agency

Defense-Wide Justification Book Volume 5 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Defense Threat Reduction Agency • Budget Estimates FY 2023 • RDT&E Program

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Volume 5 Table of Contents

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Appropriation: RDT&E, Defense-Wide   **Date: April 2022**

OVERVIEW

Our nation and the Department of Defense (DoD) face an increasingly complex security environment with growing and evolving threats. This environment includes diverse, dynamic, and growing Weapons of Mass Destruction (WMD) risks. Competitors and adversaries increasingly synchronize, integrate, and direct lethal operations with greater sophistication. Accordingly, the Defense Threat Reduction Agency (DTRA) is investing in the capabilities, expertise, and methodologies to meet its enduring mission to enable the DoD, the United States Government and International Partners to counter and deter WMD and Emerging Threats.

Part of DTRA's unique value stems from our dual roles as a Defense Agency and a Combat Support Agency. In our Defense Agency role, we respond to requirements from the services as well as from the DoD offices, including the undersecretaries of Defense for Acquisition and Sustainment, Policy and Research, and Engineering. These lines of authority give us strategic roles in the counter WMD (CWMD) fight through nuclear detection, nuclear survivability, CWMD technologies, CWMD test and evaluation, and Technical Reachback, among many key programs. As a Combat Support Agency, DTRA works alongside interagency and international partners in support of the warfighter to address the most consequential risks posed by existing and emerging WMD threats. It focuses on threats posed by near-peer competitors and rogue states while at the same time supporting the nation's nuclear deterrent. DTRA's budget request is aligned with overarching guidance from the Interim National Security Strategic Guidance, the current National Defense Strategy, and the Nuclear Posture Review. Finally, DTRA's budget signals a commitment to achieve capability outcomes and deliver effects across five core functions: (1) Enable strategic deterrence, (2) Support U.S. treaty implementation and verification, (3) Partner to reduce global WMD threats, (4) Identify vulnerabilities and mitigation strategies, and (5) Develop and deliver rapid capabilities. Furthermore, DTRA supports DoD's counter WMD (CWMD) priorities and requirements articulated in the Guidance for the Employment of the Force, the Joint Strategic Capabilities Plan, and Combatant Command campaign plans.

DTRA's RDT&E portfolio addresses complex WMD threat problems for the warfighter, including understanding the environment, threats and vulnerabilities; controlling, defeating, disabling, and disposing of threats; and enhancing DoD's ability to safeguard the force and manage consequences and outcomes. DTRA accomplishes this through three thrust areas:

- Understand the Environment, Threats, and Vulnerabilities: Provides the technical underpinnings to anticipate, detect, identify, locate, characterize, and assess WMD. DTRA's portfolio will prioritize capabilities that enable U.S. forces for more effective operations in environments where their traditional strengths in battlespace awareness are being actively countered.

- Control, Defeat, Disable, and Dispose of Threats: Provides the technical underpinnings to counter WMD proliferation and emerging threats. DTRA's portfolio will prioritize innovative capabilities that permit warfighters to defeat, interrupt, or otherwise render useless WMD and emerging threats well ahead of actual threat employment.

- Safeguard the Force and Manage Consequences and Outcomes: Support operating forces capability to monitor and respond to chemical, biological, radiological, or nuclear incidents; mitigate hazards and their effects; and allow military personnel and other mission-critical personnel to continue operating effectively. Operating forces must be prepared to recover casualties, decontaminate personnel and equipment, and establish a protective posture. In response to these emerging and other enduring challenges, the portfolio supports developing and transitioning innovative and evolving technologies to protect mission-essential personnel, capabilities and associated control and support systems.

Our RDT&E programs develop and field CWMD capabilities for the Joint Force, while at the same time exploring potential technologies to identify, characterize, and counter emerging threats.

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Department of Defense
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

05 Apr 2022

Appropriation	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****
Research, Development, Test & Eval, DW	567,055	645,430				
Total Research, Development, Test & Evaluation	567,055	645,430				

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Summary Recap of Budget Activities	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****
Basic Research	14,244	11,828				
Applied Research	162,703	197,011				
Advanced Technology Development	335,186	409,862				
Advanced Component Development & Prototypes	19,931	7,166				
System Development & Demonstration	20,750	19,563				
Management Support	14,241					
Total Research, Development, Test & Evaluation	567,055	645,430				

Summary Recap of FYDP Programs

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Advanced Component Development & Prototypes		7,166	7,130
System Development & Demonstration		19,563	28,496
Management Support			12,354
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Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****	S e c
1	0601000BR	DTRA Basic Research	01	14,244	11,828					U
		Basic Research		14,244	11,828					
13	0602134BR	Improvised Threat Reduction Applied Research	02	3,699						U
25	0602718BR	Counter Weapons of Mass Destruction Applied Research	02	159,004	197,011					U
		Applied Research		162,703	197,011					
33	0603134BR	Counter Improvised-Threat Simulation	03	3,861						U
34	0603160BR	Counter Weapons of Mass Destruction Advanced Technology Development	03	331,325	409,862					U
35	0603176BR	Advanced Concepts and Performance Assessment	03							U
		Advanced Technology Development		335,186	409,862					
98	0604134BR	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	19,931						U
105	0604551BR	Catapult	04		7,166					U
		Advanced Component Development & Prototypes		19,931	7,166					
129	0605000BR	Counter Weapons of Mass Destruction Systems Development	05	15,250	14,063					U

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		Basic Research			11,828	11,584	
13	0602134BR	Improvised Threat Reduction Applied Research	02				U
25	0602718BR	Counter Weapons of Mass Destruction Applied Research	02		197,011	192,162	U
		Applied Research			197,011	192,162	
33	0603134BR	Counter Improvised-Threat Simulation	03				U
34	0603160BR	Counter Weapons of Mass Destruction Advanced Technology Development	03		409,862	395,721	U
35	0603176BR	Advanced Concepts and Performance Assessment	03			6,505	U
		Advanced Technology Development			409,862	402,226	
98	0604134BR	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04				U
105	0604551BR	Catapult	04		7,166	7,130	U
		Advanced Component Development & Prototypes			7,166	7,130	
129	0605000BR	Counter Weapons of Mass Destruction Systems Development	05		14,063	14,403	U

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137	0605141BR	Mission Assurance Risk Management System (MARMS)	05	5,500	5,500					U
		System Development & Demonstration		20,750	19,563					
159	0605502BR	Small Business Innovation Research	06	14,241						U
180	0606853BR	Management, Technical & International Support	06							U
		Management Support		14,241						
		Total Research, Development, Test & Eval, DW		567,055	645,430					

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180	0606853BR	Management, Technical & International Support	06			12,354	U
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Program Element Table of Contents (by Budget Activity then Line Item Number)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

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Program Element Table of Contents (Alphabetically by Program Element Title)

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ACRONYMS

A2TD   Automated Advanced Targeting Development

AD   Agent Defeat

ADMB   Agent Defeat Modeling and Simulation Modeling

AI/ML   Artificial Intelligence/Machine Learning

ANTS   Attack the Network Tool Suite

ATAC   Advanced Targeting Assessment Capability

ATD   Advanced Technology Development

AWeS   Auto-Weaponeering System

BAA   Broad Agency Announcement

CBRNE   Chemical, Biological, Radiological, Nuclear, and High-yield Explosives

CCDR   Combatant Commander

CCMD   Combatant Command

C-IED   Counter-Improvised Explosive Device

CNTN	Combatant Command Countering Nuclear Threat Network
COE	Consequence of Execution
CoE-NI	Consequence of Execution – Nuclear Integration
CONOPS	Concept of Operations
CONUS	Continental United States
C-sUAS	Counter-Small Unmanned Aerial Systems
CT/CP	Counterterrorism/Counterproliferation
CTBT	Comprehensive Nuclear Test Ban Treaty
CTS	Component Test Structure
C-UAS	Counter-Unmanned Aerial System
CWMD	Countering Weapons of Mass Destruction
CWMD-T	Combating Weapons of Mass Destruction –Terrorism
DAPSS	Denied Area Persistent Sensor System
DEL	DTRA Experimentation Lab
DIAMONDS	Defense Integration and Management of Nuclear Data Services
DIOCC/DIA	Defense Intelligence Operations Coordination Center/Defense Intelligence Agency

DITEC	DTRA Integration Technical Experimentation Center
DoD	Department of Defense
DPPG	Defense Policy and Planning Guidance
DRDC	Defense Research and Development Canada
DSCS	Defense Satellite Communications System
DT&E	Development, Test, and Evaluation
DTRA	Defense Threat Reduction Agency
DTRIAC	Defense Threat Reduction Information Analysis Center
ECA	Enhanced Consequence Analysis
ECBC	Edgewood Chemical Biological Center
EM-1	Capabilities of Nuclear Weapons: Effects Manual Number 1
EMP	Electromagnetic Pulse
EMREP	Electromagnetic Reliability and Effects Predictions
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ERDC	U. S. Army Engineer Research and Development Center

FeFET	Ferroelectric Field Effect Transistors
FEFLO	Finite Element Flow Solver
FFRDC	Federally Funded Research and Development Center
FOC	Full Operational Capability
FREAK	Force-on-Force Evaluation and Analysis of Key Performance Parameters
FYDP	Future Years Defense Program
GBSD	Ground-Based Strategic Deterrent
HDBT	Hard and Deeply Buried Target
HPAC	Hazardous Prediction and Assessment Capabilities
HPC	High Performance Computing
HREIOR	High Resolution Electro-Optical Infrared Camera
HTD	Hard Target Defeat
HWIL	Hardware-in-the-Loop
IED	Improvised Explosive Device
IIRM	Interaction of Ionizing Radiation with Matter
IMAAC	Interagency Modeling and Atmospheric Assessment Center

IMEA	Integrated Munitions Effects Assessment
IMS	International Monitoring System
IoT	Internet of Things
IR	Infrared
ISS	Integrated Sensor System
IT	Information Technology
JOC	Joint Operations Center
JWICS	Joint Worldwide Intelligence Communications System
LAMP	Loop-mediated Isothermal Amplification
LBTS	Large Blast Thermal Simulator
LLE	Laboratory for Laser Energetics
LLNL	Lawrence Livermore National Laboratory
LTRI	Left-to-Right-of-Launch
M&S	Modeling and Simulation
MACS	Modular Autonomous Countering WMD System
MAGICS	Modular Airborne Gaseous Isotope Collection System

MCAPS	Mobile C-sUAS Airborne Platform Suite
MDA	Missile Defense Agency
MFO	Microwave Frequency Oscillator
MIL-HDBK	Military Handbook
MIL-STD	Military Standard
MINES	Mission Impact of Nuclear Effects Software
MIT	Mission Information Technology
MSEE	Materials Science in Extreme Environments
NACT	Nuclear Arms Control Technology
NAIMLE	Artificial Intelligence/Machine Learning Environment (NAIMLE)
NBCRV	Nuclear Biological Chemical Reconnaissance Vehicle
NCBRE	Nuclear, Chemical, Biological, Radiological, and High-Yield Explosive
NIEM	National Information Exchange Model
NIPR	Non-classified Internet Protocol Router
NLAN	Non-classified Local Area Network
NTM	Improved National Technical Means (NTM)

NuCS	Nuclear Capabilities Services
NWE	Nuclear Weapons Effects
OGA	Other Governmental Agencies
QRC	Quick Reaction Capabilities
RN	Radiological-nuclear
SAR	Synthetic Aperture Radar
SIPR	Secret Internet Protocol Router
SPIDA	Spectral Polarmetric Instrument Data Analysis
SPINS	Standoff Portable Isotopic Neutron Spectroscopy
sUAS	Small Unmanned Aerial Systems
TTP	Tactics, Techniques, and Procedures
TWAC	Targeting Weaponeering Assistance Cell
TXL	Transportable Xenon Laboratory
UAS	Unmanned Aerial Systems
UCP	Unified Command Plan
UGF	Underground Facility

UGT	Underground Test
UK	United Kingdom
URA	University Research Alliance
USANCA	U.S. Army Nuclear and Combating WMD Agency
USEUCOM	U.S. European Command
USFK	U.S. Forces Korea
USG	United States Government
USNORTHCOM	U.S. Northern Command
USPACOM	U.S. Pacific Command
USSOCOM	U.S. Special Operations Command
USSTRATCOM	U.S. Strategic Command
UTAS	Underground Targeting and Analysis System
V&V	Verification and Validation
VAPO	Vulnerability Assessment and Protection Option
VEO	Violent Extremist Organization
VIPER	Vehicle Integrated Platform Enhanced Radiac

VIRTUS	Virtual Radiation Training Through Ubiety System
VMS	Virtual Management System
VR/AR	Virtual Reality/Augmented Reality
WEP	Weapon Effects Phenomenology
WMD	Weapons of Mass Destruction
WSMR	White Sands Missile Range

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency											**Date:** April 2022	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* I BA 1: *Basic Research*					**R-1 Program Element (Number/Name)** PE 0601000BR I *DTRA Basic Research*							
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	386.814	14.244	11.828	11.584	0.000	11.584	11.715	11.945	12.184	12.427	-	-
RU: *Basic Research for Countering WMD*	386.814	14.244	11.828	11.584	0.000	11.584	11.715	11.945	12.184	12.427	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Basic Research for Countering WMD project, as the nation's primary basic research portfolio dedicated to countering weapons of mass destruction (CWMD), is a core strategic investor in future scientific and technological progress across the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high-risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the DoD, and the broader WMD threat reduction community. The portfolio addresses this guidance through capability enhancements, projects, and Science and Technology (S&T) investments that support CWMD. Specifically, they include: accelerating the development of standoff radiological/nuclear detection capabilities; securing vulnerable materials; defeating WMD agents; strategic radiation hardened microelectronics; and leveraging science, technology, and innovation through domestic partnerships and agreements.

This project solicits, coordinates, and conducts research to build a robust, forward-looking fundamental research portfolio targeting strategic, mission-focused, basic research with high potential impact for CWMD. The research projects are selected for scientific merit, technical quality, and the potential for innovation. Each research project offers opportunities to expand the knowledge base to help the warfighter, to bring to bear new science solutions with a fresh approach, or to leverage revolutionary approaches to technical surprise, building a foundation for future CWMD solutions. This research will enable new capabilities to control, defeat, disable, and/or dispose of WMD threats.

PE 0601000BR: *DTRA Basic Research*
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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency			**Date:** April 2022		
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 1: *Basic Research*		**R-1 Program Element (Number/Name)** PE 0601000BR *I DTRA Basic Research*			

B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	14.617	11.828	0.000	0.000	0.000
Current President's Budget	14.244	11.828	11.584	0.000	11.584
Total Adjustments	-0.373	0.000	11.584	0.000	11.584
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.373	-			
• Adjustments to Budget Year	-	-	11.584	0.000	11.584

Change Summary Explanation

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

PE 0601000BR: *DTRA Basic Research*
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	Date: April 2022

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency | **Date:** April 2022

Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601000BR / DTRA Basic Research	Project (Number/Name) RU / Basic Research for Countering WMD

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
RU: Basic Research for Countering WMD	386.814	14.244	11.828	11.584	0.000	11.584	11.715	11.945	12.184	12.427	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Basic Research for Countering WMD project, as the nation's primary basic research portfolio dedicated to countering weapons of mass destruction (CWMD), is a core strategic investor in future scientific and technological progress across the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high-risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the DoD, and the broader WMD threat reduction community. The portfolio addresses this guidance through capability enhancements, projects, and Science and Technology (S&T) investments that support CWMD. Specifically, they include: accelerating the development of standoff radiological/nuclear detection capabilities; securing vulnerable materials; defeating WMD agents; strategic radiation hardened microelectronics; and leveraging science, technology, and innovation through domestic partnerships and agreements.

This project solicits, coordinates, and conducts research to build a robust, forward-looking fundamental research portfolio targeting strategic, mission-focused, basic research with high potential impact for CWMD. The research projects are selected for scientific merit, technical quality, and the potential for innovation. Each research project offers opportunities to expand the knowledge base to help the warfighter, to bring to bear new science solutions with a fresh approach, or to leverage revolutionary approaches to technical surprise, building a foundation for future CWMD solutions. This research will enable new capabilities to control, defeat, disable, and/or dispose of WMD threats.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Project RU: Basic Research for Countering WMD	14.244	11.828	11.584	0.000	11.584

Description: Project RU funds the exploration and discovery of fundamental scientific knowledge related to DTRA's CWMD mission by research partnerships with academia, government, and industry. DTRA's Basic Research University Research Alliance (URA) program conducts revolutionary CWMD scientific research with broad applicability across multiple mission areas. DTRA's basic research sets conditions for disruptive gains in the future effectiveness of technology-enabled concepts of operation not possible through evolutionary research. In FY 2021, DTRA established two URAs; Materials Science in Extreme Environments (MSEE) and Interaction of Ionizing Radiation with Matter (IIRM).

FY 2022 Plans:

PE 0601000BR: DTRA Basic Research
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601000BR / DTRA Basic Research	**Project (Number/Name)** RU / Basic Research for Countering WMD

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Enable new methods to disrupt WMD attacks, enhance conventional nuclear integration, and improve enhanced consequence analysis. This Materials Science in Extreme Environments (MSEE) is a URA of 18 institutions from across the nation led by Johns Hopkins University. - Enhance capabilities to counter nuclear threat networks, enhance WMD survivability, and improve understanding the WMD environment. Interaction of Ionizing Radiation with Matter (IIRM) is a URA of 15 institutions nationwide led by Pennsylvania State University. *FY 2023 Base Plans:* DTRA enters the third year of its URA program. The overarching goals of the two URAs remain unchanged. Collectively the URAs are training more than 177 students in STEM fields critical to DTRA's mission. Importantly the URAs are providing critical exposure to DTRA-mission relevant research via internships to 87 cadets and midshipmen from the US Service Academies and ROTC programs. The URAs published 42 peer reviewed journal articles during the first year of operation. The DTRA Basic Research funded Materials Science in Extreme Environments (MSEE) URA, led by Johns Hopkins University, includes a team of 18 universities that work collaboratively with DTRA personnel to advance the fundamental understanding of material properties and mechanisms in non-equilibrium high pressure, high temperature, and high photon number regimes. The MSEE URA will enable new methods to disrupt WMD attacks, enhance conventional nuclear integration, and improve enhanced consequence analysis. - Complete first principles calculations and experiments that will improve DoD models of nuclear fireball dynamics across various environments. - Add new diagnostics, i.e., a flash x-ray spectrometer, to the experimental facility Hypervelocity Facility for Impact Research Experiments (HyFIRE). Conduct experiments to improve DoD models of penetration into quartzite and sandstone for Hard and Deeply Buried Target defeat. - Test alliance designed and fabricated material targets at the OMEGA Laser Facility to investigate the effect of pulse length on thermomechanical shock propagation. - Investigate the effect of reduced laser power and tamper materials to support additional tampered OMEGA shot. - Develop composite nanoparticles with a staged energy release. - Create staged energy release composites and additive manufacturing-derived structure-function relationships.					

PE 0601000BR: *DTRA Basic Research*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 1	**R-1 Program Element (Number/Name)** PE 0601000BR *I DTRA Basic Research*	**Project (Number/Name)** RU *I Basic Research for Countering WMD*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
The Interaction of Ionizing Radiation with Matter (IIRM) URA, led by Pennsylvania State University, includes a team of 14 partner institutions that work collaboratively with DTRA personnel to advance the fundamental understanding of the interaction of radiation with materials for detection and electronics, devices and integration, nuclear survival and response, modeling, and simulation. Ultimately this investment will enable radiation sensing from multiple platforms; cost effective hardening and hardness testing of DoD systems; and safe and efficient military operations in a nuclear environment. - Study novel findings on semiconductors for radiation detection that competes with the state of the art without the need for refrigeration or mechanical cooling to low temperatures, providing the potential for significant reduction to size, weight, and power, and ease of field use of current radiation detection capabilities. - Synthesize and test functional fibers with embedded microchip readouts that could be woven into uniforms for wearable radiation sensing. - Conduct experiments at the Los Alamos Neutron Science Center for Systems on a Chip survivability in high neutron dose environments. - Determine appropriate gas concentrations to enable long range radiation detection, concentrate on experiments for laser based sensing methods to detect radiation plumes and contamination from long range. - Conduct additional testing on transconductance for alliance designed and fabricated Ferroelectric Field Effect Transistors (FeFETs); test for radiation effects to drive an improved device design for fabrication. - Verify and expand scintillation experiments with a focus toward potential integration with semiconductor materials for combined improvements in radiation detection. *FY 2023 OCO Plans:* N/A *FY 2022 to FY 2023 Increase/Decrease Statement:* The decrease from FY 2022 to FY 2023 is due to the residual impact of prior portfolio rebalancing to fund higher priority RDT&E programs.					
Accomplishments/Planned Programs Subtotals	14.244	11.828	11.584	0.000	11.584

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

PE 0601000BR: *DTRA Basic Research*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 1	**R-1 Program Element (Number/Name)** PE 0601000BR *I DTRA Basic Research*	**Project (Number/Name)** RU *I Basic Research for Countering WMD*

D. Acquisition Strategy

Procurement methods include competitive selection awards through university partnerships, DTRA's Broad Agency Announcement, and collaborative funding through other organizations.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: *Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research*	PE 0602134BR *I Improvised Threat Reduction Applied Research*

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.502	3.699	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.201
JC: *Enable Rapid Capability Delivery*	0.502	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.752
RA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) Improvised Threat Reduction Applied Research program element (PE) funds technology outreach to produce studies that will drive earlier understanding of technologies and scientific theories for future programs to enhance the Department of Defense's ability to effectively counter asymmetric threats. Asymmetric threats are characterized by an environment in which an adversary employs a combination of conventional weapons, irregular tactics, and/or terrorism to obtain their objectives. The end-state of the PE is to evaluate the feasibility and practicality of research projects, taking the most promising proposals and translating them into practical prototypes for use against asymmetric threats.

Activities within this PE are driven by efforts to understand, anticipate, illuminate, isolate, and enable timely research that hastens the development of new capabilities for countering global asymmetric threats and emerging technologies.

B. Program Change Summary ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	3.699	0.000	0.000	0.000	0.000
Current President's Budget	3.699	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

There is no change from the previous President's Budget.

PE 0602134BR: *Improvised Threat Reduction Applied Rese...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602134BR *I Improvised Threat Reduction Applied Research*	**Project (Number/Name)** JC *I Enable Rapid Capability Delivery*

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
JC: *Enable Rapid Capability Delivery*	0.502	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.752

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) takes a deliberate, structured, and proactive approach to meet future capability gaps and requirements through continuous study. DTRA enables DoD, the U.S. Government, and International Partners to counter and deter Weapons of Mass Destruction and emerging threats. The mission is embodied in three capability areas: understand the environment, threats, and vulnerabilities; control, defeat, disable, and dispose of WMD and asymmetric threats; and safeguard the force and manage consequences.

Activities within this project are driven by current and anticipated asymmetric threats. The applied research enables the understanding and shaping of new theories and development of new technologies in support of Combatant Commands and the DoD. The applied research will drive programmatic action to anticipate, illuminate, isolate, and mitigate asymmetric threats.

This project investigates emerging threat technologies as well as developing analysis support tools that identify emergent capability requirements and associated gaps. It provides timely acquisition and delivery of solutions to address evolving threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: JC: Enable Rapid Capability Delivery	1.250	0.000	0.000	0.000	0.000
Description: This project assesses current and emerging technologies that address the evolving asymmetric threat environment. **FY 2022 Plans:** N/A **FY 2023 Base Plans:** N/A **FY 2023 OCO Plans:** N/A **FY 2022 to FY 2023 Increase/Decrease Statement:** No change. Project activities are complete.					
Accomplishments/Planned Programs Subtotals	1.250	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602134BR / *Improvised Threat Reduction Applied Research*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

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
• 33/0603134BR/JC: *Counter Improvised-Threat Simulation*	3.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.861
• 98/0604134BR/JC: *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	11.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.491

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

PE 0602134BR: *Improvised Threat Reduction Applied Rese...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602134BR *I Improvised Threat Reduction Applied Research*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

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
RA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449

A. Mission Description and Budget Item Justification

This project manages Countering Weapons of Mass Destruction (CWMD) community studies, strategic dialogues, and tabletop exercises to provide insights into emerging threats and future challenges to DTRA, DoD, and the warfighter. It delivers operationally relevant, credible, timely, and actionable recommendations to inform future operations, activities, and investments in support of countering weapons of mass destruction. In FY 2021, this project sponsored strategic research into weapons of mass destruction (WMD) trends and emerging science and technology that are anticipated to shape the future battlespace and require changes to DTRA's prioritization and/or focus. This project supported international dialogues with allies and partners, strategic studies not otherwise covered in the extant literature, and the development/delivery of experiential learning table top exercises to DTRA and the CWMD community. These sponsored activities produced custom recommendations DTRA, DoD, and the USG can use to mitigate the adverse effects of WMD challenges.

Additionally, funding in this project provides for support to optimize organizational policy development, decision making, research and development project management, engineering and technical analysis, and other professional support services to improve the effectiveness of program processes, procedures, and outcomes.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: CWMD Cross-Cutting Technical and Information Sciences	2.449	0.000	0.000	0.000	0.000
Description: This project manages Countering Weapons of Mass Destruction (CWMD) community studies, strategic dialogues, and tabletop exercises to provide insights into emerging threats and future challenges to DTRA, DoD, and the warfighter.					
FY 2022 Plans: N/A					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement:					

PE 0602134BR: *Improvised Threat Reduction Applied Rese...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602134BR / *Improvised Threat Reduction Applied Research*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
No change. Project activities are complete.					
Accomplishments/Planned Programs Subtotals	2.449	0.000	0.000	0.000	0.000

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: *Counter Weapons of Mass Destruction Applied Research*	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
• 98/0604134BR: *Counter Improvised- Threat Technology Demonstration, Prototype Development*	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
• 105/0604551BR: *Catapult*	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing
• 159/0605502BR: *Small Business Innovation Research*	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency											**Date:** April 2022	

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*						R-1 Program Element (Number/Name) PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*						

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	756.569	159.004	197.011	192.162	0.000	192.162	205.414	208.558	203.879	200.236	Continuing	Continuing
RA: *CWMD Cross-Cutting Technical and Information Sciences*	346.681	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing
RD: *Nuclear Technologies and Capabilities Development*	145.646	83.538	101.229	106.095	0.000	106.095	110.854	112.082	114.321	111.359	Continuing	Continuing
RG: *Counter WMD Technologies and Capabilities Development*	134.528	20.752	29.359	30.277	0.000	30.277	30.871	31.589	32.220	31.788	Continuing	Continuing
RR: *CWMD Test and Evaluation*	129.714	18.426	18.311	23.120	0.000	23.120	23.771	23.973	24.699	23.546	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) Counter Weapons of Mass Destruction (CWMD) Applied Research program element funds the application and advancement of basic scientific knowledge to develop novel materials, devices, systems, and methods supporting next generation concepts and technologies, to include advances in Weapons of Mass Destruction (WMD) surveillance, detection, defeat, prevention, nonproliferation, counter proliferation, consequence management, and treaty verification.

This Applied Research portfolio is aligned with strategic planning objectives and Science and Technology (S&T) investment direction established annually by DTRA, which directly support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader WMD threat reduction community.

The portfolio advances DTRA's CWMD mission by balancing the following: invest in DTRA's applied research capabilities and increase the CWMD technology base to maximize future pay-off; capitalize on opportunities to deliver innovative, cost-effective solutions to technical challenges that must be resolved prior to system-specific technology investigations and development; and ensure applied research efforts are directly aligned to the mission-specific capability requirements of DTRA, the Military Departments, Combatant Commanders, other DoD and federal agencies, and international partners.

PE 0602718BR: *Counter Weapons of Mass Destruction Appl...*
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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency			**Date:** April 2022		
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*			**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*		
B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	174.221	197.011	0.000	0.000	0.000
Current President's Budget	159.004	197.011	192.162	0.000	192.162
Total Adjustments	-15.217	0.000	192.162	0.000	192.162
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-10.618	-			
• SBIR/STTR Transfer	-4.599	-			
• Adjustments to Budget Year	0.000	0.000	192.162	0.000	192.162

Change Summary Explanation

FY 2023 funds increase because the FY 2022 President's Budget request did not include out-year funding. In FY 2021, DTRA reprogrammed funding for higher Departmental priorities.

PE 0602718BR: *Counter Weapons of Mass Destruction Appl...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mas s Destruction Applied Research*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

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
RA: *CWMD Cross-Cutting Technical and Information Sciences*	346.681	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing

A. Mission Description and Budget Item Justification

The CWMD Cross-Cutting Technical and Information Sciences project develops concepts and technologies in the areas of high-speed information processing, modeling and simulation, signal detection, and data-driven decision analysis in support of the Defense Threat Reduction Agency's (DTRA's) technical reach-back teams. This project develops and maintains continuously improving collaborative architectures and Weapons of Mass Destruction (WMD) modeling and simulation codes that drive an integrated suite of decision support tools serving the Combatant Commands, other Department of Defense (DoD) agencies, and national and international Countering WMD (CWMD) partners. This effort also funds research activities that benefit the public through analysis and engagement to reduce and counter threats posed by WMD via the Strategic Trends Research Initiative (STRI). STRI cultivates national and international research community partnerships across domains, bringing scientific, technical, and social science experts together to help understand and anticipate WMD capabilities and threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RA: CWMD Cross-Cutting Technical and Information Sciences *Description:* Project RA develops concepts and technologies in the areas of high-speed information processing, modeling and simulation, signal detection, and data-driven decision analysis. *FY 2022 Plans:* - Develop and sustain advanced information technology capabilities enabling CWMD situational understanding and leverage advanced data science techniques to improve threat analysis to better inform operational planning. - Transition new data science solutions to improve real-time threat analysis into regular operational use. - Leverage non-traditional acquisition means to develop and deliver technical capabilities responsive to urgent, emergent theater requirements in support of critical strategic partners. - Deliver timely technical capabilities in response to Combatant Command (CCMD) emergent needs that would otherwise not be met in the required timeline. - Provide integrated support for effective transition to advanced development partners by leveraging an overarching assessment approach to capability development efforts to identify promising efforts for potential transition, will improve transition effectiveness rate. - Assist in transition of additional projects that may otherwise not transition effectively to a sustainable partnership.	36.288	48.112	32.670	0.000	32.670

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Utilize new and emergent advanced modeling and simulation tools and development activities to develop two integrated CWMD modeling capabilities to support in theater operational planning. - Generate timely and actionable recommendations on mitigation of anticipated future challenges based upon assessment/analysis of foreign and domestic Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) trends. - Develop timely and relevant table top exercises and refine strategic dialogues/symposia/fora to accommodate year-upon-year learning and advancement on anticipated future battlespace challenges. - Refine strategic research projects to improve tangible outcomes and achievable recommendations for future activities to counter WMD development and use. - Continue developing quarterly updates to forecasted changes/developments in geopolitical landscapes and the intersection of CBRNE and WMD employment systems. - Leverage CBRNE community resources to provide in-depth and expert analysis to current and future WMD problem sets. *FY 2023 Base Plans:* - Develop new and emergent advanced modeling and simulation tools, applications and other development activities to develop two, and deliver one new, integrated CWMD modeling capabilities to support in theater operational planning. - Develop analytics using machine and deep learning to provide geospatial prediction analysis and behavior variance for CWMD pattern-of-life analysis. - Develop processing algorithms using artificial intelligence and machine learning to tip and cue analysts for CWMD threat network analysis. - Provide strategic, urgent Counter-Threat capability development for urgent and emergent theater needs, with focus on detector and sensor design, data analysis and storage, search capabilities, defeat pathways, and continuous test site technical advancement. - Develop data integration, analysis and visualization solutions in support of CCMDs, Special Operations Forces, and other mission partners. Incorporate new technologies to increase the scalability, reusability, and transferability of data science capabilities developed across commands/units supported. - Apply advanced analytics to develop novel capabilities for illuminating and disrupting procurement and proliferation networks and coordinating CWMD operations. Will transition at least two operational prototypes to supported commands/units or advanced developers.					

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B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Conduct studies and table-top exercises to understand and explore the Chemical Biological Radiological and Nuclear spectrum and enabling technology challenges facing our warfighters in the next five to ten years. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY 2022 to FY 2023 is due to the net impact of 1) the realignment of resources to PE 0603160BR in Project RR for a) data architecture signatures technology development to locate, identify, and track special nuclear materials and b) necessary upgrades to national test bed capabilities, 2) a realignment to O&M to fund expert dialogues with specialists at universities for global futures strategic planning, and 3) realignments from quick reaction capabilities to better align investments to National, Departmental, and Agency level strategic guidance.					
Accomplishments/Planned Programs Subtotals	36.288	48.112	32.670	0.000	32.670

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
• 13/0602134BR: *Improvised Threat Reduction Applied Research*	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
• 98/0604134BR: *Counter Improvised- Threat Technology Demonstration, Prototype Development and Testing*	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
• 105/0604551BR: *Catapult*	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing
• 159/0605502BR: *Small Business Innovation Research*	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.241

Remarks

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D. Acquisition Strategy

 Competitive selection of most appropriate performers to fulfill science and technology development needs.

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| **Exhibit R-2A**, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency | | | | | | | | | | | | **Date:** April 2022 | |

Appropriation/Budget Activity 0400 *I* 2						**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*			**Project (Number/Name)** RD *I 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*	145.646	83.538	101.229	106.095	0.000	106.095	110.854	112.082	114.321	111.359	Continuing	Continuing

A. Mission Description and Budget Item Justification

Nuclear Technologies and Capabilities Development encompasses the following related areas:

Research, development, test, and evaluation (RDT&E) to identify, develop, and exploit signatures associated with nuclear threats in support of U.S. capabilities that detect and interdict such threats; and locate, identify, and track special nuclear material and improve detection factors such as range, time, sensitivity, and accuracy to enhance Service and Special Mission Unit capabilities. These efforts support Department of Defense (DoD) requirements for countering terrorism, counterproliferation, nonproliferation, countering rogue states, and homeland defense.

RDT&E to systematically study signatures associated with adversary nuclear programs and nuclear detonations to gain knowledge or understanding necessary to: determine technical capabilities needed to improve DoD contingency planning activities; improve DoD situational awareness on the nuclear battlefield; and improve capabilities to attribute the source of a nuclear detonation.

Research and develop innovative technologies for the protection of mission-essential personnel, critical military and national defense capabilities, and associated control and support systems during a nuclear event. Research under this project supports the mission critical systems identified under DoD Instruction 3150.09, Chemical, Biological, Radiological, and Nuclear Survivability Policy. System vulnerability research develops nuclear assessment capabilities to support operational planning, weapons effects predictions, and strategic system design. This activity also provides the DoD's nuclear design and protection standards for new and existing systems, e.g., command and control facilities and aircraft. Key systems include the Nuclear Command and Control System, the net-centric thin-line, and both military and civilian satellites and associated support systems. Experimental capabilities research provides the warfighter with unique x-ray, gamma ray, and electromagnetic pulse (EMP) test capabilities in support of system survivability development, certification, and sustainment. These efforts also support international collaboration, user groups, case study reviews, and the Joint Atomic Information Exchange Group. The human survivability effort conducts research to develop and validate mortality and morbidity models associated with radiological and nuclear weapon effects.

Research and development modeling tools to support military operational planning, weapons effects predictions, and strategic system design decisions; consolidate validated modeling tools for integrated functionality; predict system responses to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock, and radiation environments; provide detailed adversary nuclear infrastructure characterization to enhance counterforce operations and hazard effects; and, develop foreign nuclear weapon outputs.

Delivers integrated applications, data analysis, and cloud-ready AI-enhanced capabilities, cross-cutting platform supporting full spectrum of nuclear operations, wargaming, and assessments. Provides timely electronic access to Nuclear Testing Archives supporting validation of the effectiveness of the Nuclear Deterrent and survivability of US military assets without a return to nuclear testing.

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Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RD *I Nuclear Technologies and Capabilities Development*

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	83.538	101.229	106.095	0.000	106.095
Description: Project RD develops direct and indirect technologies for the detection of radiation and non-radiative signatures associated with nuclear threats, and advances warfighter capabilities to rapidly locate, characterize, and counter such threats. *FY 2022 Plans:* - Sponsor/host one trial nuclear wargame with current Mission Impact of Nuclear Effects Software (MINES) capabilities; advance nuclear wargaming research to include other nuclear weapon effects and incorporate into MINES development. - Develop prototype sensors using novel materials (e.g. CLLBC (Cs2LiLa(Br,Cl)6:Ce, Dual-sided micro-structured semiconductor neutron detectors (DSMSNDs)) for evaluation of military applications. - Develop improved nuclear weapons outputs models that correctly account for radioactive debris, improving estimates of fallout-induced casualties and impacts on space and missile forces. - Develop improved nuclear weapons induced fire ignition models that correctly account for thick fuels, improving estimates of battle and collateral damages from nuclear plans. - Conduct tests at the U.S. Army White Sands Missile Range (WSMR) Large Blast Thermal Simulator (LBTS) to quantify combined airblast and thermal effects, improving estimates of impacts to ground maneuver forces operating on a nuclear battlefield. - Integrate toolsets in cloud platform for nuclear planning, Nuclear, Chemical, Biological, Radiological, and High-Yield Explosive (NCBRE) assessments, and advanced analytics in support of Service and Combatant Command planning and assessments and Conventional Nuclear Integration situational awareness - includes tool development to synthesize necessary modeling data for tool sets. - Provide integration support for nuclear technology programs; support international activities, user groups, nuclear survivability program, and case study reviews. Also utilizes the Nuclear Science and Engineering Research Center to leverage DoD Degree Granting Institutions to develop new capabilities and advance DTRA's mission to support the warfighter. - Publish updates to nuclear survivability military standards for aircraft, ships, missiles and interceptor. - Support nuclear modernization through the certification of strategic materials and the upgrade of nuclear effects testing and diagnostics. - Provide nuclear survivability operational support through analyses, vulnerability assessments, and the review of mission critical systems.					

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Deliver enhanced cloud platform with integrated toolsets for nuclear planning, Nuclear, Chemical, Biological, Radiological, and high Explosive (NCBRE) assessments, and advanced analytics for warfighter and Conventional-Nuclear Integration (CNI) situational awareness. - Deliver integrated improved nuclear physics and effects model in theater nuclear planning tool, improving accuracy of nuclear planning capability for US Army and Combatant Commands (CCMDs). - Provide advanced search and discovery Artificial intelligence/Machine Learning (AI/ML) algorithms for improved media retrieval capability documents (20%), photographs (2%), and films (.5%), enabling nuclear survivability and effects programs with higher fidelity data. *FY 2023 Base Plans:* - Conduct technical demonstration of radiological-nuclear (RN) Virtual Reality/Augmented Reality (VR/AR) capabilities. - Investigate autonomous operations and swarming applications for radiation sensors on unmanned platforms. - Mature advanced search and discovery (ASD) of archived nuclear documents using AI/ML algorithms to support increased user portal retrieval capability of information from documents (25%), photographs (10%), and films (2%) to enable nuclear survivability and effects algorithm programs with higher fidelity data. - Enhance Nuclear, Chemical, Biological, Radiological, High Explosives (NCBRE) Artificial Intelligence/Machine Learning Environment (NAIMLE) data curation and operability specific to RN data types; integration of container development between working data models related to nuclear missions - Integrate 3D effects model supporting aviation assets in theater nuclear planning tool to improve nuclear planning capability for US Army and CCMDs. - Deliver tools for visualization of data feeds to meet warfighter needs and for sharing data with foreign partners (Supporting Nuclear Enterprise Threat Characterization and Nuclear Enterprise Threat Isolation). - Facilitate three nuclear war-games design and operation with Mission Impacts of Nuclear Events (MINES); Support five DoD nuclear war-games & exercises design and operation with SME, existing tools, and MINES capabilities; Sponsor/host two nuclear war-games with updated MINES capabilities. - Initiate x-ray development to optimize key performance parameters on new Quad Eagle Simulator; enable growth and continued availability of DTRA's capabilities. - Develop EMP Planning Tools (Electromagnetic Reliability & Effects Prediction (EMREP) v9, STRATCOM Support equipment, Nuclear Battlefield Test Support).					

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Conduct EMP modular expansion and data demonstration, scintillation Hardware-in-the-Loop (HWIL) production/certification demonstrations, modeling and experimentation to characterize dose rate, and neutron effects. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY 2022 to FY 2023 is primarily for increased investment in nuclear survivability. This increase will fund new Combatant Command Electromagnetic Pulse (EMP) testing requirements for various battlefield systems, surface vessels, and aircraft.					
Accomplishments/Planned Programs Subtotals	83.538	101.229	106.095	0.000	106.095

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
• 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
• 129/0605000BR/RD: *Counter Weapons of Mass Destruction Systems Development*	15.250	14.063	14.403	0.000	14.403	13.414	13.381	13.649	13.922	Continuing	Continuing

Remarks

D. Acquisition Strategy

 Competitive selection of most appropriate performers to fulfill science and technology development needs.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RG *I Counter WMD 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
RG: *Counter WMD Technologies and Capabilities Development*	134.528	20.752	29.359	30.277	0.000	30.277	30.871	31.589	32.220	31.788	Continuing	Continuing

A. Mission Description and Budget Item Justification

Counter WMD Technologies and Capabilities Development encompasses the following areas.

Defeat Technologies program develops innovative kinetic and non-kinetic weapon technologies to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat adversarial use of WMD, while minimizing collateral effects. Technology development focuses on the physical or functional defeat of WMD threat materials, an adversary's ability to deliver the same, and the physical and nonphysical support networks enabling both. It does so through the systematic identification and maturation of technologies capable of defeating WMD agents or agent-based processes and selecting technologies for integration into weapons, delivery systems, or rapid WMD elimination capabilities. This effort includes developing specific WMD agent/agent-based process simulants, sub-scale test infrastructure, and sampling capability required for effective development, testing, and evaluation of next-generation CWMD capabilities. The project places a high priority on understanding, characterizing, and validating potential weapon effects within mathematical confidence as it relates to the unintended release of hazardous threat materials. Technologies with the potential for weapon and capability integration are transitioned to Budget Activity (BA) 3, Advanced Technology Development (ATD) efforts. On a limited basis, technology test data is shared with coalition partners.

WMD counterforce technologies research develops weapons effects modeling algorithms, full and sub-scale test series required to investigate CWMD weapon effects and sensor performance, and visualization and situational awareness tools to support the next generation Technical Reachback cell. These activities are critical enablers for the development of advanced CWMD planning tools. Energetics research develops materials and weapon design technology providing defeat capabilities for engaging hard and deeply buried targets that are beyond current high explosive blast/fragmentation warhead technology.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RG: Counter WMD Technologies and Capabilities Development	20.752	29.359	30.277	0.000	30.277
Description: Project RG develops innovative kinetic and non-kinetic weapons technologies to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat adversarial use of WMD while minimizing collateral effects.					
FY 2022 Plans: - Initiate Next Generation Access Denial capability based on studies conducted in FY 2021. - Develop and transition next generation agent defeat capabilities utilizing enhanced energetics, advanced manufacturing techniques and tactics that improve performance and lethality and reduce production time and cost.					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Complete Coalition Warfare Program-Autonomous Tunnel Exploitation with RoK. - Explore operationalizing nontraditional data; Transition WMDpedia. - Complete independent review of forecasting tactics, techniques, and procedures (TTPs), improve regional assessments, validate effectiveness of forecasting TTPs. - Program, plan, and manage Explosive Ordnance Disposal (EOD) diagnostics and defeat projects and deliver technologies. - Program, plan, and manage low-visibility and breaching projects and deliver technologies. - Provide Systems Engineering and Integration support for both internal DTRA programs and provide subject matter expertise to external organizations with efforts related to CWMD and hard and deeply buried target (HDBT) defeat. - Support Combatant Command (CCMD) operational planning activities while identifying warfighting capability gaps. - Deliver Targeting Recommendation Packages and conduct training activities as requested by the CCMDs. - Support weapons effects testing programs and weapons development activities. *FY 2023 Base Plans:* - Develop, test, and evaluate specialized capabilities to protect against and defeat WMD though diagnostics and characterization of Agent Defeat Modeling and Simulation Modeling (ADMB). - Conduct lab-scale tests and large/full-scale test event to validate source term prediction capabilities for ADMB. - Conduct small and mid-scale tests to verify weapons effects phenomenology (WEP) models (e.g. over-burial and penetration). - Begin to explore a Cloud Based Solution transition and continue multi-dimensional upgrades into the Vulnerability Assessment and Protection Option (VAPO) Platform. - Complete partnership with U. S. Army Engineer Research and Development Center (ERDC) and the United Kingdom (UK) to deliver a VAPO capability allowing end users to perform an assessment of aerial delivered threats and weapons. - Initiate combined effects model development with completion of Hi-Fi calculations. - Explore existing Artificial Intelligence/Machine Learning (AI/ML) advancements for weapons effects phenomenology RDT&E application. - Program, plan, and manage Explosive Ordnance Disposal (EOD) diagnostics and defeat projects and deliver technologies. - Program, plan, and manage low-visibility and breaching projects and deliver technologies.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Provide Systems Engineering and Integration support for internal DTRA programs and provide subject matter expertise to external organizations with efforts related to CWMD and hard and deeply buried target (HDBT) defeat. - Deliver Targeting Recommendation Packages and conduct training activities as requested by the CCMDs. - Support weapons effects testing programs and weapons development activities in support of Combatant Command CWMD requirements. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY 2022 to FY 2023 is mostly due to inflation and a slight investment increase in CWMD Hard Target Defeat (HTD) Weapons Technologies development activities.					
Accomplishments/Planned Programs Subtotals	20.752	29.359	30.277	0.000	30.277

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
• 34/0603160BR/RG: *Counter Weapons of Mass Destruction Advanced Technology Development*	233.769	266.262	246.951	0.000	246.951	253.002	258.835	262.652	258.335	Continuing	Continuing

Remarks

D. Acquisition Strategy
Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	
Appropriation/Budget Activity 0400 *I* 2				**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*				**Project (Number/Name)** RR *I CWMD Test and Evaluation*			
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**
RR: *CWMD Test and Evaluation*	129.714	18.426	18.311	23.120	0.000	23.120	23.771	23.973	24.699	23.546	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Countering WMD Test and Evaluation project provides a unique national test capability for simulated WMD facilities and processes. This capability provides structured and systematic end-to-end test event planning, preparation, management, execution, and data analysis. It also offers test instrumentation (data acquisition systems and optics), scientific analysis and predictions, test article construction, test article/test bed remediation, tunnel mining, architectural and engineering design, systems engineering and integration, and test data management. The project leverages 50 years of expertise in investigating weapons effects and target response across the spectrum of hostile environments that could be created by proliferate nations or terrorist organizations with access to advanced conventional weapons or WMD. Subject matter experts design full and sub-scale testing strategies focusing on weapon-target interaction with fixed soft and hardened facilities to include above ground facilities, cut-and-cover facilities, and deep underground tunnels. This capability does not exist anywhere else within the DoD and supports the counterproliferation pillar of the National Strategy to Counter WMD.

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Title: RR: Countering WMD Test and Evaluation	18.426	18.311	23.120	0.000	23.120
Description: Project RR provides a unique national test bed capability for the study of weapon-target interaction, simulated WMD facility characterization and defeat testing, and evaluation of asymmetric threats observed in theater, to evaluate the implications of WMD and other special weapon use against U.S. military and civilian assets. Additionally, Project RR develops instrumentation and identifies unique threat signatures that can support early detection and development of countermeasures to support Combatant Command needs. *FY 2022 Plans:* - Continue to modernize and evolve instrumentation and diagnostics capability to support test and evaluation activities across the WMD spectrum, as well as develop new methods to address the evolving threats - Replicate, test, and evaluate identified threat WMD systems and use tactics, techniques, and procedures to support the development of WMD detection, characterization, and countermeasures documented in CCMD requirements. - Perform threat-relevant test and evaluation activities to document unique signatures that identify, characterize, and determine the effectiveness of defeat techniques for WMD proliferation and production facilities, leveraging the Nevada National Security Site, as well as a novel transportable capability that can replicate specifics threats of interest to the CCMDs.					

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 2	**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RR *I CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Design and build testbeds in small-, mid-, and large-scale environments capable of capturing data needed to improve and validate high-fidelity modeling and simulation tools used to predict US weapon and adversary threat effects on facilities of interest. - Employ the capability developed in FY2021 to support the characterization and evaluation of observed automated and autonomous threat systems with WMD elements, and demonstrate progress in the development of algorithms to support the early detection and countermeasures development. - Complete the development of the data architecture, transportable data collection system, and portals to enable data acquisition for all DTRA research and development activities, and the interagency sharing of data at multiple classification levels. - Demonstrate advancement in data analysis techniques, data analytics, and signature-based algorithms to support the development of deliverable tools to the combatant commands. *FY 2023 Base Plans:* - Modernize and evolve instrumentation and diagnostics capability to support test and evaluation activities across the CWMD spectrum, as well as develop new methods to address the evolving threats. - Remediate and restore existing test bed articles to continue support across the CWMD spectrum. - Replicate, test, and evaluate identified threat WMD systems and use tactics, techniques, and procedures to support the development of WMD detection, characterization, and countermeasures documented in CCMD requirements. - Perform threat-relevant test and evaluation activities to document unique signatures that identify, characterize, and determine the effectiveness of defeat techniques for WMD proliferation and production facilities, leveraging the Nevada National Security Site, as well as a novel transportable capability that can replicate specifics threats of interest to the CCMDs. - Design and build testbeds in small-, mid-, and large-scale environments capable of capturing data needed to improve and validate high-fidelity modeling and simulation tools used to predict US weapon and adversary threat effects on facilities of interest. - Maintain ability to execute RDT&E testing at Kirtland AFB, the White Sands Missile Range (WSMR), and the Nevada National Security Site. *FY 2023 OCO Plans:* N//A *FY 2022 to FY 2023 Increase/Decrease Statement:*					

PE 0602718BR: *Counter Weapons of Mass Destruction Appl...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 **I** 2	**R-1 Program Element (Number/Name)** PE 0602718BR **I** *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RR **I** *CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
The increase from FY 2022 to FY 2023 funds necessary upgrades to national test bed capabilities in support of countering WMD test and evaluation activities and environmental compliance.					
Accomplishments/Planned Programs Subtotals	18.426	18.311	23.120	0.000	23.120

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
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	0.010	4.523	9.530	0.000	9.530	10.170	10.063	10.150	7.557	Continuing	Continuing

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency											**Date:** April 2022	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*						**R-1 Program Element (Number/Name)** PE 0603134BR *I Counter Improvised-Threat Simulation*						
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	86.542	3.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	90.403
JC: *Enable Rapid Capability Delivery*	86.542	3.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	90.403

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) Counter Improvised-Threat Simulation program element funds the assessment, analysis, experimentation, evaluation, and testing of systems to counter asymmetric threats to determine feasibility for prototyping, spiral development, Program of Record investment and potential for immediate fielding.

Understanding asymmetric threats is the driving force behind DTRA's deliberate, structured, and proactive approach to understanding, anticipating, illuminating, isolating, and/or mitigating threats through identified needs. DTRA is working to bring concepts and theories forward to assist and hasten the development of subsystems and components along with integration into prototypes for field experiments and/or laboratory tests.

B. Program Change Summary ($ in Millions)

	FY 2021	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	3.861	0.000	0.000	0.000	0.000
Current President's Budget	3.861	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

There is no change from the previous President's Budget.

PE 0603134BR: *Counter Improvised-Threat Simulation*
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603134BR / *Counter Improvised-Threat Simulation*	Project (Number/Name) JC / *Enable Rapid Capability Delivery*

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
JC: *Enable Rapid Capability Delivery*	86.542	3.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	90.403
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project is driven by current and projected threat activities. It enables the timely validation, resourcing, applied research and prototype development and delivery to counter threats that continue to impact US forces. The project supports the evaluation of integrated technologies or prototype systems in a realistic environment to counter asymmetric threats.

DTRA performs experiments and modeling and simulations in the pursuit of advanced technology development. The outcomes of these experiments are incorporated into new or existing prototypes to enhance system performance while reducing cost.

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B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: JC: Enable Rapid Capability Delivery **Description:** This project employs technology development, modeling-and-simulation, and analysis support tools to meet Combatant Command requirements and anticipated threats. DTRA provides timely acquisition and delivery of solutions that respond to asymmetric threat requirements and gaps. **FY 2022 Plans:** N/A **FY 2023 Base Plans:** N/A **FY 2023 OCO Plans:** N/A **FY 2022 to FY 2023 Increase/Decrease Statement:** No change. Project activities are complete.	3.861	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	3.861	0.000	0.000	0.000	0.000

PE 0603134BR: *Counter Improvised-Threat Simulation*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 **/** 3	**R-1 Program Element (Number/Name)** PE 0603134BR **/** *Counter Improvised-Threat Simulation*	**Project (Number/Name)** JC **/** *Enable Rapid Capability Delivery*

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
• 13/0602134BR/JC: *Improvised Threat Reduction Applied Research*	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.500
• 98/0604134BR/JC: *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	11.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.841

Remarks

D. Acquisition Strategy
 Competitive selection to determine the optimal performer who can produce a viable deliverable within schedule and budget constraints.

PE 0603134BR: *Counter Improvised-Threat Simulation*
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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency											**Date:** April 2022	

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*

R-1 Program Element (Number/Name)
PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology 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	696.649	331.325	409.862	395.721	0.000	395.721	407.669	417.369	419.816	414.431	Continuing	Continuing
RA: *CWMD Cross-Cutting Technical and Information Sciences*	148.257	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
RD: *Nuclear Technologies and Capabilities Development*	148.546	46.587	54.417	60.249	0.000	60.249	59.722	61.765	62.800	63.855	Continuing	Continuing
RG: *Counter WMD Technologies and Capabilities Development*	399.686	233.769	266.262	246.951	0.000	246.951	253.002	258.835	262.652	258.335	Continuing	Continuing
RR: *CWMD Test and Evaluation*	0.160	0.010	4.523	9.530	0.000	9.530	10.170	10.063	10.150	7.557	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Technology Development portfolio is aligned with National and DoD strategic objectives as well as with Science and Technology (S&T) investment direction established annually by the Defense Threat Reduction Agency (DTRA). The objectives directly support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader Weapons of Mass Destruction (WMD) threat reduction community.

The portfolio advances the Countering WMD (CWMD) mission by selecting advanced technology development initiatives that meet the following criteria: (1) efforts are clearly defined and directly linked to mission-specific capability requirements of DTRA, the Military Departments, Combatant Commanders, other DoD and federal agencies, and international partners; (2) preliminary assessments of subsystems and components offer the highest potential for technological feasibility, operability, and producibility upon transition out of S&T research; (3) activities demonstrate cost effectiveness or cost reduction potential of technologies during field testing or simulation at scale.

PE 0603160BR: *Counter Weapons of Mass Destruction Adva...*
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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*		**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	

B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	356.659	399.362	0.000	0.000	0.000
Current President's Budget	331.325	409.862	395.721	0.000	395.721
Total Adjustments	-25.334	10.500	395.721	0.000	395.721
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	10.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-16.465	-			
• SBIR/STTR Transfer	-8.869	-			
• Adjustments to Budget Year	-	-	395.721	0.000	395.721

Congressional Add Details ($ in Millions, and Includes General Reductions)	**FY 2021**	**FY 2022**
Project: RD: *Nuclear Technologies and Capabilities Development*		
Congressional Add: *Data-Driven Methods of Nuclear Weapon Discovery*	0.000	4.000
Congressional Add Subtotals for Project: RD	0.000	4.000
Project: RG: *Counter WMD Technologies and Capabilities Development*		
Congressional Add: *Strategic Systems Defeat (SSD)*	5.000	0.000
Congressional Add: *Detection and Tracking Technology*	0.000	4.000
Congressional Add: *Reduced Order Models*	0.000	2.500
Congressional Add Subtotals for Project: RG	5.000	6.500
Congressional Add Totals for all Projects	5.000	10.500

Change Summary Explanation

FY 2023 funds increase because the FY 2022 President's Budget request did not include out-year funding. In FY 2021, DTRA reprogrammed funding for higher Departmental priorities.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

| **Appropriation/Budget Activity**
0400 *I* 3 | | | | **R-1 Program Element (Number/Name)**
PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development* | | | | **Project (Number/Name)**
RA *I CWMD Cross-Cutting Technical and Information Sciences* | | | |

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
RA: *CWMD Cross-Cutting Technical and Information Sciences*	148.257	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The CWMD Cross-Cutting Technical and Information Sciences project provides technical expertise through continuous reach-back and quick reaction support to the United States and its allies across the Countering Weapons of Mass Destruction (CWMD) mission space. The project performs continuous modeling of ad hoc computational analyses on the consequences of Weapons of Mass Destruction (WMD) in consultation with military and civilian planners, warfighters, and first responders, and leverages research performed by the Project on Advanced Systems and Concepts for CWMD at the Naval Postgraduate School. The project also supports international CWMD cooperation by developing technologies and concepts suitable for foreign release.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RA: CWMD Cross-Cutting Technical and Information Sciences *Description:* Project RA develops modeling and simulation capabilities and provides technical reachback support to maintain and increase decision advantages for the United States and its allies through improved situational understanding across the complete CWMD mission space. *FY 2022 Plans:* - Conduct Research and Development to maintain DTRA's cutting edge e 24/7 technical reach back assistance capability, decision support and planning support to Combatant Commands (CCMDs), Services, interagency and other government customers in support of immediate missions and operational environments. - Provide critical training support in CWMD-relevant models to strategic partner community. - Provide Quick Reaction Capability to urgent warfighter requirements based on new or emerging gaps. - Provide best-of-breed applied research from elsewhere in the portfolio to develop prototypes for fielding with unique strategic customers to meet requirements aligned with the current National Defense Strategy (NDS). - Apply Artificial Intelligence/Machine Learning (AI/ML) technology advances (from academia, industry, and other government organizations) to CWMD/ Counter Threat Network (CTN)-specific problem sets. - Provide CCMDs with operational prototypes of tools for CWMD data integration, analysis, and visualization.	50.959	84.660	78.991	0.000	78.991

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Develop and sustain advanced information technology capabilities enabling CWMD situational understanding and leverage advanced data science techniques to improve threat analysis to better inform operational planning. ***FY 2023 Base Plans:*** - Develop tools to improve CWMD situational awareness capabilities integration into Android/web based environments supporting the warfighter. - Provide 24/7 technical reachback assistance, decision support and planning support to CCMD, Service, interagency and other government customers to support immediate mission and operational environments. - Provide critical training support in CWMD-relevant models to over 500 strategic partner community students. - Anticipate responding to over 1250 requests for information/assistance with over 95% timeliness in responses. - Facilitate technical exchanges with partners in at least 14 countries, and with all geographic and functional CCMDs, to improve understanding of and refine requirements. Will conduct at least one CCMD technology demonstration event to showcase and deliver capability solutions to theater customers to meet critical CWMD requirements. - Leverage applied research from within the broader portfolio to develop prototypes for fielding and testing, then will transition them to partner organizations with unique strategic customers to meet requirements aligned with the current NDS. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY 2022 to FY 2023 is due primarily to the net impact of 1) increased investment in Hazardous Prediction and Assessment Capabilities (HPAC) and 2) the realignment of resources from quick reaction capabilities to fund higher Agency priorities.					
Accomplishments/Planned Programs Subtotals	50.959	84.660	78.991	0.000	78.991

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
• 13/0602134BR: *Improvised Threat Reduction Applied Research*	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

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: *Counter Weapons of Mass Destruction Applied Research*	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing
• 98/0604134BR: *Counter Improvised- Threat Technology Demonstration, Prototype Development and Testing*	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
• 105/0604551BR: *Catapult*	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing
• 159/0605502BR: *Small Business Innovation Research*	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

Assessment and selection of best performer for developmental requirements to meet specific military capability needs.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	
Appropriation/Budget Activity 0400 / 3					**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*				**Project (Number/Name)** 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*	148.546	46.587	54.417	60.249	0.000	60.249	59.722	61.765	62.800	63.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Research, development, test, and evaluation (RDT&E) to identify, develop, and exploit signatures associated with nuclear threats in support of U.S. capabilities that detect and interdict such threats; and locate, identify, and track special nuclear material and improve detection factors such as range, time, sensitivity, and accuracy to enhance Service and Special Mission Unit capabilities. These efforts support Department of Defense (DoD) requirements for countering terrorism, counter proliferation, nonproliferation, countering rogue states, and homeland defense.

RDT&E to systematically study signatures associated with adversary nuclear programs and nuclear detonations to gain knowledge or understanding necessary to: determine technical capabilities needed to improve DoD contingency planning activities; improve DoD situational awareness on the nuclear battlefield; and improve capabilities to attribute the source of a nuclear detonation.

Research and develop innovative technologies for the protection of mission-essential personnel, critical military and national defense capabilities, and associated control and support systems during a nuclear event. Research under this project supports the mission critical systems identified under DoD Instruction 3150.09, Chemical, Biological, Radiological, and Nuclear Survivability Policy. System vulnerability research develops nuclear assessment capabilities to support operational planning, weapons effects predictions, and strategic system design. This activity also provides the DoD's nuclear design and protection standards for new and existing systems, e.g., command and control facilities and aircraft. Key systems include the Nuclear Command and Control System, the net-centric thin-line, and both military and civilian satellites and associated support systems. Experimental capabilities research provides the warfighter with unique x-ray, gamma ray, and electromagnetic pulse (EMP) test capabilities in support of system survivability development, certification, and sustainment. These efforts also support international collaboration, user groups, case study reviews, and the Joint Atomic Information Exchange Group. The human survivability effort conducts research to develop and validate mortality and morbidity models associated with radiological and nuclear weapon effects.

Research and development modeling tools to support military operational planning, weapons effects predictions, and strategic system design decisions; consolidate validated modeling tools for integrated functionality; predict system responses to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock, and radiation environments; provide detailed adversary nuclear infrastructure characterization to enhance counterforce operations and hazard effects; and, develop foreign nuclear weapon outputs.

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	46.587	50.417	60.249	0.000	60.249

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RD *I 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 develops, integrates and transitions radiation detection technologies, as well as systems, tools, techniques, and procedures that take advantage of non-radiation based signatures, in order to advance warfighter capabilities to rapidly detect, localize, characterize, and interdict nuclear and radiological threats. *FY 2022 Plans:* - Develop Synthetic Aperture Radar (SAR) Sensor Characterization Device capability, data analysis and algorithm development, and other Combatant Command countering nuclear threat network (CNTN) capabilities. - Support the design and operation of at least four DoD nuclear wargames and exercises with subject matter expertise, existing tools, and integrated initial MINES software capabilities. - Test and evaluate the Integration of improved contamination identification and avoidance capabilities into Service sensor networks and command and control systems. - Provide prototype electromagnetic pulse (EMP) sensor(s) for use on the battlefield enabling warfighter situational awareness of EMP effects. - Conduct technical demonstration of integrated sensor network capable of detecting, identifying and providing early warning of radiological hazards. - Develop and test prototype test articles for the integration of the Vehicle Integrated Platform Enhanced Radiac (VIPER) into Army Combat vehicles (Army Multipurpose Vehicle Platform). - Develop prototype Vehicle Integrated Platform Enhanced Radiac for aviation platforms. - Demonstrate tools that predict nuclear weapons effects on petroleum and transportation networks, improving nuclear planning and targeting decisions. - Demonstrate improved tool to predict non-ideal nuclear weapons airblast effects on ground maneuver forces, improving operational planning for conventional and nuclear battlefield. - Enhance cloud platform for integrated toolsets for nuclear planning, Nuclear, Chemical, Biological, Radiological, and high Explosive (NCBRE) assessments, and advanced analytics in support of Service and Combatant Command planning and assessments and Conventional Nuclear Integration situational awareness. - Support the DoD Atomic Veteran program by determining radiation exposure levels and managing the Atomic Veterans Service Certificate recognition. - Perform nuclear survivability modeling for effects on humans. *FY 2023 Base Plans:*					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 I 3	**R-1 Program Element (Number/Name)** PE 0603160BR I Counter Weapons of Mass Destruction Advanced Technology Development	**Project (Number/Name)** RD I Nuclear Technologies and Capabilities Development

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Provide USSTRATCOM with Nuclear Capability Services (NuCS) integration of five improved Enhanced Consequence Analysis (ECA) models. - Deliver improved nuclear weapons environment model that accounts for nuclear fire ignition in thick fuels. - Conduct test at the Large Blast Thermal Simulator (LBTS) to quantify combined air blast and thermal effects. - Deliver improved nuclear weapons environment models that reduces uncertainty from nuclear ground shock. - Deliver ECA logistics and petroleum transmission models that account for impacts of significant nuclear weapons environments. - Begin standard development for Military Standard (MIL-STD) for DOD Battlefield Systems. - Publish updated nuclear survivability standards for Military Handbook (MIL-HDBK), Surface Vessels. - Develop nuclear survivability (NS) standards for MIL-STDs and MIL-HDBK for Space and Missiles; prepare final coordination of MIL-STD 3053; conduct initial MIL-STD 3054 revision coordination. - Conduct EMP Technology and Vulnerability Assessments for VC-25B, Ground-Based Strategic Deterrent (GBSD - Minuteman replacement), and FFG-62 support - Demonstrate platform agnostic sensors networked within military command systems; integrate edge data processing for radiological-nuclear (RN) assessments across all echelons; provide prototype 3D mapping capability for the Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY 2022 to FY 2023 is primarily for increased investment in nuclear survivability with resources realigned from RG-Advanced Energetics. This increase funds new Combatant Command Electromagnetic Pulse (EMP) testing requirements for various battlefield systems, surface vessels, and aircraft.					
Accomplishments/Planned Programs Subtotals	46.587	50.417	60.249	0.000	60.249

	FY 2021	FY 2022
Congressional Add: Data-Driven Methods of Nuclear Weapon Discovery	0.000	4.000

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RD *I Nuclear Technologies and Capabilities Development*

	FY 2021	**FY 2022**
FY 2021 Accomplishments: N/A		
FY 2022 Plans: Develop tool to derive nuclear weapons-to-critical-infrastructure coupling parameters from data-driven sources to improve operational planning for conventional and nuclear battlefield activities.		
Congressional Adds Subtotals	0.000	4.000

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
• 129/0605000BR/RD: *Counter Weapons of Mass Destruction Systems Development*	15.250	14.063	14.403	0.000	14.403	13.414	13.381	13.649	13.922	Continuing	Continuing

Remarks

D. Acquisition Strategy
 Assessment and selection of best performer for developmental requirements to meet specific military capability needs.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

| **Appropriation/Budget Activity** 0400 *I* 3 | | | | **R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development* | | | | | | **Project (Number/Name)** RG *I Counter WMD 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
RG: *Counter WMD Technologies and Capabilities Development*	399.686	233.769	266.262	246.951	0.000	246.951	253.002	258.835	262.652	258.335	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter WMD Technologies and Capabilities Development encompasses the following areas.

Defeat Technologies researches, develops, integrates, demonstrates, and transitions innovative kinetic and non-kinetic weapon capabilities to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat Weapons of Mass Destruction (WMD) while minimizing collateral effects.

Technology development focuses on the physical or functional defeat of (1) chemical, biological, nuclear, and radiological threat materials, (2) an adversary's ability to deliver the same, as well as (3) the physical and non-physical support networks enabling both. This program achieves these goals through the systematic identification and maturation of technologies capable of defeating WMD agents or agent-based processes, then integrating them into weapons, delivery systems, or rapid WMD elimination capabilities. This effort includes developing specific WMD agent/agent-based process simulants, test infrastructure, and sampling capability required for effective development, testing, and evaluation of next generation capabilities to ensure optimum weapon solutions are achieved. Requirements are delineated in Agency Priority Lists for lethal and non-lethal Countering WMD (CWMD) capability. Based on specified requirements, weapons and capabilities are transitioned to a Service program of record for system acquisition.

Counter emergent threat technologies research develops and transitions a full spectrum of new technologies to counter emergent WMD threats. This research supports the U.S. Special Operations Command (USSOCOM) in two areas: (1) counter proliferation research is a collaborative effort to develop advanced, warfighter-unique technologies to defeat WMD development and acquisition pathways, to include defeat of the devices themselves, while minimizing risks to U.S. forces; and (2) counter violent extremist organization concepts and technologies to integrate and synchronize activities that prevent violent extremist organizations and rogue nation states from developing, acquiring, proliferating, or using WMD. This effort supports Commander, USSOCOM responsibilities under the Chairman, Joint Chiefs of Staff Unified Command Plan.

Counterforce technologies research develops, integrates, demonstrates, and transitions capabilities to find, characterize, assess, and plan for the defeat of WMD threats. This research is focused in three areas: (1) WMD battlespace awareness provides warfighters with tools to find, characterize, and assess WMD threats; (2) weapons effects research provides modernized, fast-running, validated CWMD planning tools and integrates modeling and simulation software to optimize the execution of WMD and associated hard target defeat operations; and (3) innovative engineering of select promising technologies discovered under fundamental and basic research to increase the effectiveness of weapons against blast doors and other underground structures for functional defeat of Underground Facilities (UGFs), WMD, and their delivery systems.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG *I Counter WMD Technologies and Capabilities Development*

DTRA provides a unique national test bed capability for simulated weapons of mass destruction (WMD) facility characterization, weapon-target interaction, and WMD facility defeat testing. This test bed is capable of responding to operational needs outside of DTRA's research portfolio and is used by the DoD, Military Services, Combatant Commanders, and other Federal Agencies to evaluate the implications of WMD, conventional weapons, and other special weapons used against U.S. military or civilian systems and targets.

Target assessment technologies research develops, integrates, tests, demonstrates, and transitions processes and technologies providing advanced capabilities in the areas of WMD target assessment, automated advanced targeting development (A2TD), facility defeat, and full dimensional defeat. This research develops analytical tools and processes required to: (1) find and characterize WMD targets and associated hard and deeply buried targets (HDBTs); and (2) assess the results of physical and functional defeat mechanisms (such as direct attack). The A2TD initiative seeks to apply emerging computer assisted technologies to automate target characterization for hard targets and WMD targets. The end result will be faster and more efficient characterization of important hard targets and WMD targets. The facility defeat project develops, validates, and employs processes and software for characterization and defeat of command specified hard targets in conjunction with Defense Intelligence Agency (DIA) analysis. The full dimensional defeat project aims to develop an enterprise capability for finding and identifying a facility, characterizing its function and physical layout, determining current or future vulnerabilities to available defeat mechanisms, planning and executing an attack, assessing damage, and denying reconstitution efforts. The dynamic capabilities encompassed in this effort provide Combatant Commands (CCMDs) and the intelligence community tools and processes needed to hold at risk high value hard targets and WMD targets possessed by adversaries.

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Title: RG: Counter WMD Technologies and Capabilities Development *Description:* Project RG develops advanced technologies and weapon concepts and validates their applicability to CWMD. ***FY 2022 Plans:*** - Develop and transition next generation agent defeat capabilities utilizing enhanced energetics, advanced manufacturing techniques and tactics that improve performance and lethality and reduce production time and cost. - Program, plan, and manage Explosive Ordnance Disposal (EOD) diagnostics and defeat projects and deliver technologies. - Program, plan, and manage low-visibility and breaching projects and deliver technologies. - Provide capability to rapidly support technical requirements through RDT&E of current and emerging WMD threats to operational forces. - Conduct research and development of dual-use threat components for test and evaluation in support of CCMDs, network disruption capability, and RDT&E of current and emerging WMD threats to operational force.	228.769	259.762	246.951	0.000	246.951

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG *I Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Develop quick reaction capabilities (QRCs) in support of geographic Combatant Commands (CCMD) and in collaboration with Other Governmental Agencies (OGA) to detect, locate, track, characterize and counter threats in the areas of counter proliferation (CP) and counter weapons of mass destruction (CWMD). *FY 2023 Base Plans:* - Improve Integrated Munitions Effects Assessment (IMEA) capability by integrating data model for more accurate modeling of buildings, bunkers, and tunnels used for storage of WMD. - Develop application interfaces for core IMEA functionality to interface with other targeting tools (e.g. Joint Targeting Toolbox (JTT), Digital Image Exploitation Engine (DIEE)), and intelligence databases (Modernized Intelligence Database (MIDB) and Machine-Assisted Analysis Rapid-Repository System (MARS)) - Initiate development of new tools to auto-generate customizable briefing materials for visualization to support target validation authority and CCMD's intent. - Complete modularization of IMEA code and move to cloud computing/storage, multi-platform user environment support, full spectrum module archival/transition. - Complete IMEA capability to model cityscapes for target characterization. - Deliver Auto-Weaponeering System (AWeS) guided weaponeering tool utilizing neural networks for integration and distribution through IMEA. - Integrate Multi-Hit on multiple aim points for bunkers and tunnel solution recommendations into IMEA. - Conduct research and development to integrate sensor feeds directly to the Targeting Weaponeering Assistance Cell (TWAC) software for neural network analysis. - Deliver TWAC targeting recommendation packages and conduct training activities as requested by Combatant Commands - Provide TWAC systems engineering and integration support for both internal DTRA and external organizations with efforts related to CWMD and Hardened and Deeply Buried Targets (HDBT). - Support Combatant Commands with CWMD targeting and operational planning activities while identifying warfighting capability gaps. - Develop and test small unmanned aerial systems (UAS) for autonomous technical reconnaissance of a WMD target in denied area. - Demonstrate next-generation sensor for radio-nuclide (RD) data collection in collaboration with the Department of Energy. - Develop offensive counter-proliferation, counter-WMD technologies in support of Combatant Command requirements.					

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG *I Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Develop WMD pathway defeat technologies, as well as threat-specific test articles and analyses. - Develop lighter, smaller, more effective breaching capabilities. - Develop and test structural, reactive materials and advanced agent defeat concepts to improve the capability to defeat and/or neutralize WMD-related targets. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY 2022 to FY 2023 is primarily due to decreased investment in counterterrorism activities in this project. Resources were realigned to higher priority efforts, including Nuclear Survivability in Project RD to meet new Combatant Command requirements for Electromagnetic Pulse (EMP) testing for various battlefield systems, surface vessels, and aircraft. Additionally, resources were realigned to DTRA's Operation and Maintenance account to fund Combatant Command requirements for threat analysis.					
Accomplishments/Planned Programs Subtotals	228.769	259.762	246.951	0.000	246.951

	FY 2021	**FY 2022**			
Congressional Add: Strategic Systems Defeat (SSD)	5.000	0.000			
FY 2021 Accomplishments: - Design, develop, test, and deliver five Hand Emplaced Form Factor (HEFF) sensors that can perform a classified Combatant Command mission identified in an approved and validated Joint Staff Joint Emergent Operational Needs Statement (JEON) for a Combatant Command as well as a new, emergent classified requirement from a second Combatant Command. - Design, develop, and assess "brassboard" prototyping efforts for next-gen SSD sensing capabilities leveraging DARPA developed technologies, and for participation in Missile Defense Agency's Left-Through-Right-of-Launch (LTRI) wargame campaign. ***FY 2022 Plans:*** N/A					
Congressional Add: Detection and Tracking Technology	0.000	4.000			
FY 2021 Accomplishments: N/A					
FY 2022 Plans: - Develop a taggant system to track WMD items of interest through covert means.					
Congressional Add: Reduced Order Models	0.000	2.500			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 I 3	**R-1 Program Element (Number/Name)** PE 0603160BR I *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG I *Counter WMD Technologies and Capabilities Development*

	FY 2021	FY 2022
FY 2021 Accomplishments: N/A		
FY 2022 Plans: - Develop and implement methodologies for Model Order Reduction (MOR) using data-driven (machine learning) Reduced Order Model (ROM) techniques on legacy code data, observation data, and first principles code simulation data.		
Congressional Adds Subtotals	5.000	6.500

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/RG: *Counter Weapons of Mass Destruction Applied Research*	20.752	29.359	30.277	0.000	30.277	30.871	31.589	32.220	31.788	Continuing	Continuing

Remarks

D. Acquisition Strategy

Assessment and selection of best performer for developmental requirements to meet specific military capability needs.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	

Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603160BR / Counter Weapons of Mass Destruction Advanced Technology Development				Project (Number/Name) RR / CWMD Test and Evaluation			

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
RR: CWMD Test and Evaluation	0.160	0.010	4.523	9.530	0.000	9.530	10.170	10.063	10.150	7.557	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Countering WMD Test and Evaluation project provides a unique national test capability for simulated WMD facilities and processes. This capability provides structured and systematic end-to-end test event planning, preparation, management, execution, and data analysis. It also offers test instrumentation (data acquisition systems and optics), scientific analysis and predictions, test article construction, test article/test bed remediation, tunnel mining, architectural and engineering design, systems engineering and integration, and test data management. The project leverages 50 years of expertise in investigating weapons effects and target response across the spectrum of hostile environments that could be created by proliferant nations or terrorist organizations with access to advanced conventional weapons or WMD. Subject matter experts design full and sub-scale testing strategies focusing on weapon-target interaction with fixed soft and hardened facilities to include above ground facilities, cut-and-cover facilities, and deep underground tunnels. This capability does not exist anywhere else within the DoD and supports the counter proliferation pillar of the National Strategy to Counter WMD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RR: CWMD Test and Evaluation	0.010	4.523	9.530	0.000	9.530
Description: This project employs technology development, modeling-and-simulation, and analysis support tools to meet Combatant Command requirements and anticipated threats. DTRA provides timely acquisition and delivery of solutions that respond to asymmetric threat requirements and gaps. FY 2022 Plans: -Conduct two test events that incorporate WMD threats on unmanned systems across multiple domains (land, air, sea) that further incorporate automated and autonomous capabilities. - Document unique signatures of threat of unmanned systems operating at different levels of automation and autonomy and make available through DTRA's data architecture system to the broader USG community. - Integrate algorithms developed in FY 2021 to develop a multi-phenomenology-based tool deliverable to a Combatant Command (CCMD) as a means for future development of early detection and countermeasures for specific threats in their AOR. FY 2023 Base Plans: - Provide end-to-end test event planning, management, execution, and analysis supporting DoD, federal agencies', and friendly nations' programs to counter proliferation and defeat WMD.					

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RR *I CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
- Provide test articles, bunker and building construction, data acquisition systems, test optics, and data analysis. - Conduct test events, in conjunction with Combatant Commands and Services, that incorporate WMD threats on unmanned systems across multiple domains (land, air, and sea) that further incorporate automated and autonomous capabilities. - Document unique signatures of threat of unmanned systems operating at different levels of automation and autonomy and make available through DTRA's data architecture system to the broader USG community. - Conduct testing to understand blast propagation and associated wall damage from an internal explosion; develop simplified internal detonation and dispersion model for blast propagation through failing walls; update/validate blast propagation models in Integrated Munitions Effects Assessment (IMEA) and Vulnerability Assessment and Protection Option (VAPO). - Develop/validate models for blast propagation through failing walls (both light and heavy walls) for standard US inventory-sized weapons (500#, 1000#, 2000# GBU); understand the blast and fragment environment in adjacent room for equipment damage estimates. **FY 2023 OCO Plans:** N/A **FY 2022 to FY 2023 Increase/Decrease Statement:** The increase from FY 2022 to FY 2023 funds 1) data architecture signatures technology for tracking of special nuclear materials, and 2) necessary upgrades to national test bed capabilities in support of DTRA's countering WMD test and evaluation activities with resources realigned from Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR.					
Accomplishments/Planned Programs Subtotals	0.010	4.523	9.530	0.000	9.530

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: *Counter Weapons of Mass Destruction Applied Research*	18.426	18.311	23.120	0.000	23.120	23.771	23.973	24.699	23.546	Continuing	Continuing

Remarks

PE 0603160BR: *Counter Weapons of Mass Destruction Adva...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 3	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RR *I CWMD Test and Evaluation*

D. Acquisition Strategy

 N/A

PE 0603160BR: *Counter Weapons of Mass Destruction Adva...*
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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603176BR *I Advanced Concepts and Performance Assessment*						

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	6.505	0.000	6.505	6.125	5.887	5.792	5.641	Continuing	Continuing
RR: *CWMD Test and Evaluation*	0.000	0.000	0.000	6.505	0.000	6.505	6.125	5.887	5.792	5.641	Continuing	Continuing

Note

On November 9, 2020, the Deputy Secretary of Defense directed the programmatic transfer of the National Assessment Group (NAG) from Office of the Under Secretary of Defense for Acquisition & Sustainment (OUSD(A&S)) to DTRA, previously budgeted under Program Element (PE) 0604942D8Z, to DTRA for a better alignment of similar missions. The RDT&E funding is captured under this new PE 0603176BR, Budget Activity (BA) 03. This new PE represents an administrative transfer of an ongoing effort, not a new start.

A. Mission Description and Budget Item Justification

The NAG conducts rapid, secure, and independent assessments of critical and unique technologies to support the Military Services, other government agencies, and DTRA. This rapid assessment group provides independent assessments of critical and unique technologies and capabilities for customers in the areas of counter WMD and emerging threats. The NAG provides an independent review/analysis and reporting of operational assessments, capability demonstrations, and test events.

B. Program Change Summary ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	6.505	0.000	6.505
Total Adjustments	0.000	0.000	6.505	0.000	6.505
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Functional Transfer (NAG)	-	-	6.505	0.000	6.505

Change Summary Explanation

The increase from the FY 2022 President's Budget is due to the functional transfer of the National Assessment Group (NAG) from Office of the Under Secretary of Defense for Acquisition & Sustainment (OUSD(A&S)) to DTRA.

PE 0603176BR: *Advanced Concepts and Performance Assess...*
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	
Appropriation/Budget Activity 0400 *I* 3				**R-1 Program Element (Number/Name)** PE 0603176BR *I Advanced Concepts and Performance Assessment*				**Project (Number/Name)** RR *I CWMD Test and Evaluation*			
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
RR: *CWMD Test and Evaluation*	0.000	0.000	0.000	6.505	0.000	6.505	6.125	5.887	5.792	5.641	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

On November 9, 2020, the Deputy Secretary of Defense directed the programmatic transfer of the National Assessment Group (NAG) from Office of the Under Secretary of Defense for Acquisition & Sustainment (OUSD(A&S)) to DTRA, previously budgeted under Program Element (PE) 0604942D8Z, to DTRA for a better alignment of similar missions. The RDT&E funding is captured under this new PE 0603176BR, Budget Activity (BA) 03. This new PE represents an administrative transfer of an ongoing effort, not a new start.

A. Mission Description and Budget Item Justification

This project conducts rapid, secure, and independent assessments of critical and unique technologies to support the Military Services, other government agencies, and DTRA.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Project RR: CWMD Test and Evaluation *Description:* Project RR conducts independent assessments, analyses, reviews, capability demonstrations and test events conducted by the NAG. *FY 2022 Plans:* N/A *FY 2023 Base Plans:* • Conduct short/no notice unique technical assessments in support of DoD efforts to detect, deter, and defeat (D3) WMD threats. • Conduct threat replication testing using capabilities that support the DoD D3 mission. • Mission analysis will continue as this new program pivots full support to the Counter WMD mission space. *FY 2023 OCO Plans:* N/A *FY 2022 to FY 2023 Increase/Decrease Statement:*	0.000	0.000	6.505	0.000	6.505

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603176BR / *Advanced Concepts and Performance Assessment*	**Project (Number/Name)** RR / *CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The increase from FY 2022 is due to the functional transfer of the National Assessment Group (NAG) from Office of the Under Secretary of Defense for Acquisition & Sustainment (OUSD(A&S)) to DTRA.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	6.505	0.000	6.505

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: *Counter Weapons of Mass Destruction Applied Research*	18.426	18.311	23.120	0.000	23.120	23.771	23.973	24.699	23.546	Continuing	Continuing
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	0.010	4.523	9.530	0.000	9.530	10.170	10.063	10.150	7.557	Continuing	Continuing

Remarks

D. Acquisition Strategy
 N/A

PE 0603176BR: *Advanced Concepts and Performance Assess...*
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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604134BR *I Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*

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	409.393	19.931	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	429.324
JC: *Enable Rapid Capability Delivery*	380.093	11.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	391.584
JS: *Assist Situational Understanding*	29.300	1.607	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	30.907
RA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833

A. Mission Description and Budget Item Justification

This program element supports the development, demonstration, and testing of technologies to advance the analytical infrastructure, methods, and tools to enhance asymmetric countermeasure solutions. Advancements in analytics include the production of tools that leverage machine learning and artificial intelligence, increasing our ability to expedite the understanding of emerging threats and accompanying activities. This investment also enables development and delivery of capabilities to understand, anticipate, illuminate, isolate, and/or mitigate asymmetric threats and their effects.

DTRA expedites technology transition from the laboratory to operational use to reduce risk within the acquisition process. This is done by evaluating integrated technologies or prototype systems in a high quality and realistic operating environment.

B. Program Change Summary ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	19.931	0.000	0.000	0.000	0.000
Current President's Budget	19.931	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

There is no change from the previous President's Budget.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 I 4	**R-1 Program Element (Number/Name)** PE 0604134BR I *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC I *Enable Rapid Capability Delivery*

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
JC: *Enable Rapid Capability Delivery*	380.093	11.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	391.584
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

DTRA delivers counter asymmetric threats materiel solutions in support of joint and combined forces, effectively addressing changes to threat tactics, techniques, and procedures (TTPs). DTRA responds to asymmetric threats identified by the forward deployed warfighter as well as academia and industry.

This project builds prototypes and tests and evaluates existing industry systems to meet Combatant Command capability gaps and emerging asymmetric threats. DTRA also provides solutions to prevent or mitigate battlefield operational surprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: JC: Enable Rapid Capability Delivery **Description:** This project delivers materiel solutions to counter asymmetric threats in support of joint and combined forces supporting contingency operations, effectively addressing changes to threat tactics, techniques, and procedures (TTPs). **FY 2022 Plans:** N/A **FY 2023 Base Plans:** N/A **FY 2023 OCO Plans:** N/A **FY 2022 to FY 2023 Increase/Decrease Statement:** No change. Project activities are complete.	11.491	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	11.491	0.000	0.000	0.000	0.000

Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 **/** 4	**R-1 Program Element (Number/Name)** PE 0604134BR **/** *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC **/** *Enable Rapid Capability Delivery*

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
• 13/0602134BR/JC: *Improvised Threat Reduction Applied Research*	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.500
• 33/0603134BR/JC: *Counter Improvised-Threat Simulation*	3.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.861

Remarks

D. Acquisition Strategy

Assess and select best performer for developmental requirements to meet specific military capability needs. Performer base includes research developers across DoD and other Government agency laboratories, academia, and industry.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency | **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	Project (Number/Name) JC / *Enable Rapid Capability Delivery*

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
Anti-Armor IED (AAIED)	C/FFP	Battelle : Idaho Falls, ID	16.608	-		-		-		-		-	0.000	16.608	16.608
Booby Trapped Structures (BTS)	C/FFP	Shield AI : San Diego, CA	14.737	-		-		-		-		-	0.000	14.737	14.737
Buried IED	C/CPFF	Naval Research Lab : Washington, DC	9.852	-		-		-		-		-	0.000	9.852	9.852
Home-Made Explosives (HME)	C/CPFF	Manufacturing Techniques, Inc. (MTEQ) HQ : Lorton, VA	31.783	-		-		-		-		-	0.000	31.783	31.783
Network	C/FFP	John Hopkins : Baltimore, MD	44.959	-		-		-		-		-	0.000	44.959	44.959
Person-Born IED (PBIED)	C/FFP	MIT Lincoln Laboratory (MIT-LL) : Lexington, MA	19.456	-		-		-		-		-	0.000	19.456	19.456
Radio Controlled IED (RCIED)	C/CPFF	Rampart Technologies, Colorado Springs, CO : Sericore, Hanover, MD	3.515	-		-		-		-		-	0.000	3.515	3.515
RDT&E Technology Enablers	C/CPFF	Various : Various	54.776	-		-		-		-		-	0.000	54.776	54.776
Sensitive Integration Office (SIO) Programs	C/CPFF	Various : Various	43.771	-		-		-		-		-	0.000	43.771	43.771
Tunnel	C/FFP	ERDC: Vicksburg, MS : MIT Lincoln Labs: Boston, MA	10.208	-		-		-		-		-	0.000	10.208	10.208
Unmanned Aerial Systems (UAS)	C/FFP	Technology Service Corporation (TSC) Fairfax, VA : BAE Systems, Fridley, MN	33.647	-		-		-		-		-	0.000	33.647	33.647

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency													**Date:** April 2022		

Appropriation/Budget Activity 0400 **/** 4	**R-1 Program Element (Number/Name)** PE 0604134BR **/** Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing	**Project (Number/Name)** JC **/** Enable Rapid Capability Delivery

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Vehicle-Attached IED (VAIED)	C/CPFF	Various : TBD	2.770	-		-		-		-		-	0.000	2.770	2.770
Vehicle-Borne IED (VBIED)	C/CPFF	Naval Surface Warfare Center (NSWC) Dahlgren : King George County, VA	24.564	-		-		-		-		-	0.000	24.564	24.564
Water-Borne IED (WBIED)	C/FFP	Various : Various	5.027	-		-		-		-		-	0.000	5.027	5.027
Integrated Signatures Program (ISP)	MIPR	Indian Head Explosive Ordnance Technology Division : Indian Head, MD	-	4.000	Jul 2021	-		-		-		-	0.000	4.000	4.000
Split Aces 4.0	MIPR	Naval Air Systems Command PM263 : Patuxent River, MD	-	2.841	Jul 2021	-		-		-		-	0.000	2.841	2.841
Data Science for Emerging Threats	C/CPAF	Massachusetts Institute of Technology : Boston, MA	-	1.081	Jul 2021	-		-		-		-	0.000	1.081	1.081
Image Recognition Proof-of-Concept	SS/T&M	Carnegie Mellon University : Pittsburgh, PA	-	0.202	May 2021	-		-		-		-	0.000	0.202	0.202
		Subtotal	315.673	8.124		-		-		-		-	0.000	323.797	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advisory for Strategic and Emergent Technologies	C/CPAF	Mission Technology Reston : Reston, VA	-	0.367	Mar 2021	-		-		-		-	0.000	0.367	0.367
		Subtotal	-	0.367		-		-		-		-	0.000	0.367	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency													**Date:** April 2022	
Appropriation/Budget Activity 0400 / 4								**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*					**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation (T&E) 6.4	MIPR	Naval Air Weapons Station : China Lake, CA	36.519	-		-		-		-		-	0.000	36.519	36.519
T&E Threat Support 6.4	MIPR	Intelligence and Information Warfare Directorate (I2WD), Communications-Electronics Research, Development and Engineering Center (CERDEC) : Aberdeen Proving Ground, MD	21.939	-		-		-		-		-	0.000	21.939	21.939
C-sUAS Test & Evaluation	MIPR	Naval Air Warfare Center Weapons Division : China Lake, CA	4.720	3.000	Jul 2021	-		-		-		-	0.000	7.720	7.720
SETA Capability Research Architecture Cell (CRAC)	C/CPAF	Zel Technologies : Reston, VA	1.242	-		-		-		-		-	0.000	1.242	1.242
Subtotal			64.420	3.000		-		-		-		-	0.000	67.420	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	380.093	11.491	-	-	-	-	0.000	391.584	N/A

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604134BR *I Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC *I Enable Rapid Capability Delivery*

	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
Anti-Armor IED (AAIED)																												
Explosive Form Projectile (EFP) Detect - High Resolution Electro-Optical Infrared Camera (HREIOR)																									█	█		
Explosive Form Projectile (EFP) Detect - Stalker																									█	█		
Explosive Form Projectile (EFP) Detect Spiral																									█	█		
Non-Linear Junction Tech																					█	█	█	█	█	█		
EFP Detection & Defeat																									█			
Booby Trapped Structures (BTS)																												
Iron Horse																						█	█	█				
Buried IED																												
Microwave Frequency Oscillator (MFO) - Mineroller																					█	█	█	█	█	█		
Spectral Polarmetric Instrument Data Analysis (SPIDA)																					█	█	█	█	█	█	█	
SPIDA Spiral (Automated Change Detection)																										█	█	
Home-Made Explosives (HME)																												
Mini Hyper Spectral Imaging Group 3																			█	█	█	█	█	█	█	█	█	
Standoff Portable Isotopic Neutron Spectroscopy (SPINS)																					█	█	█	█	█			
Improvised Threat Device Replication																												
T&E Threat Support																									█	█	█	
Network																												
Cobalt Doom																	█	█	█	█	█	█	█	█	█	█	█	█

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing	**Project (Number/Name)** JC / Enable Rapid Capability Delivery

	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
Explosives attribution and exploitation (EA2)																					█	█	█	█	█	█	█	█
Improved National Technical Means (NTM) Integration																							█	█	█	█	█	█
North Wind								█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Sensitive Integration Office Programs						█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Tough Luck	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ISP																												
Person-Born IED (PBIED)																												
Atomic Magnetometer																					█	█	█	█				
PBIED Sensor Integration (Tiger Paw)															█	█	█	█	█	█	█	█	█	█				
Radio Controlled IED (RCIED)																												
Songbird (Whistler Spiral)																								█	█	█	█	█
RDT&E Technology Enablers																												
Technical Outreach BA 4							█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Counter-small Unmanned Aerial Systems (C-sUAS)																												
C-sUAS Test and Evaluation																					█	█	█	█	█	█	█	█
GroundTaker																		█	█	█	█	█	█	█	█	█	█	█
Microwave Frequency Oscillator (MFO) C-sUAS													█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Mobile C-sUAS Airborne Platform Suite (MCAPS) Spiral																					█	█	█	█	█	█	█	█
Multi vs. Multi Airborne Dispersed																								█	█	█	█	█
Multi vs. Multi Dismounted Deployed																								█	█	█	█	█
Pike on Reaper																								█	█	█	█	█

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing	**Project (Number/Name)** JC / Enable Rapid Capability Delivery

	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
Tech Exploitation Tech Red Device Coordination																			▮	▮	▮	▮	▮	▮	▮	▮	▮	
Split Aces 4.0																										▮	▮	▮
Test & Eval																												
Test & Evaluation Support																										▮	▮	▮
Vehicle-Borne IED (VBIED)																												
Supernova Spiral																							▮	▮	▮	▮	▮	
C-IED																												
Travel																		▮	▮	▮	▮	▮	▮	▮	▮	▮	▮	
UK Joint Tech Development																					▮	▮	▮	▮	▮	▮	▮	
VBIED Detection Sensor Integration																						▮	▮	▮	▮	▮	▮	
Global Data Integration																												
Data Science for Emerging Threats																												
Image Recognition Proof-of-Concept																												

	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
Anti-Armor IED (AAIED)																												
Explosive Form Projectile (EFP) Detect - High Resolution Electro-Optical Infrared Camera (HREIOR)																												
Explosive Form Projectile (EFP) Detect - Stalker																												
Explosive Form Projectile (EFP) Detect Spiral																												
Non-Linear Junction Tech																												

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	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
EFP Detection & Defeat																												
Booby Trapped Structures (BTS)																												
Iron Horse																												
Buried IED																												
Microwave Frequency Oscillator (MFO) - Mineroller																												
Spectral Polarmetric Instrument Data Analysis (SPIDA)																												
SPIDA Spiral (Automated Change Detection)																												
Home-Made Explosives (HME)																												
Mini Hyper Spectral Imaging Group 3																												
Standoff Portable Isotopic Neutron Spectroscopy (SPINS)																												
Improvised Threat Device Replication																												
T&E Threat Support																												
Network																												
Cobalt Doom																												
Explosives attribution and exploitation (EA2)																												
Improved National Technical Means (NTM) Integration																												
North Wind																												
Sensitive Integration Office Programs																												
Tough Luck																												
ISP	■	■																										
Person-Born IED (PBIED)																												
Atomic Magnetometer																												

Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604134BR *I Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC *I Enable Rapid Capability Delivery*

	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
PBIED Sensor Integration (Tiger Paw)																												
Radio Controlled IED (RCIED)																												
Songbird (Whistler Spiral)																												
RDT&E Technology Enablers																												
Technical Outreach BA 4																												
Counter-small Unmanned Aerial Systems (C-sUAS)																												
C-sUAS Test and Evaluation	▓	▓	▓																									
GroundTaker																												
Microwave Frequency Oscillator (MFO) C-sUAS																												
Mobile C-sUAS Airborne Platform Suite (MCAPS) Spiral																												
Multi vs. Multi Airborne Dispersed	▓	▓	▓	▓	▓																							
Multi vs. Multi Dismounted Deployed																												
Pike on Reaper																												
Tech Exploitation Tech Red Device Coordination																												
Split Aces 4.0	▓	▓	▓																									
Test & Eval																												
Test & Evaluation Support																												
Vehicle-Borne IED (VBIED)																												
Supernova Spiral																												
C-IED																												
Travel																												
UK Joint Tech Development																												

Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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	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
VBIED Detection Sensor Integration																												
Global Data Integration																												
Data Science for Emerging Threats					███████████																							
Image Recognition Proof-of-Concept					███████████																							

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Anti-Armor IED (AAIED)				
Explosive Form Projectile (EFP) Detect - High Resolution Electro-Optical Infrared Camera (HREIOR)	1	2020	4	2020
Explosive Form Projectile (EFP) Detect - Stalker	1	2020	4	2020
Explosive Form Projectile (EFP) Detect Spiral	1	2020	4	2020
Non-Linear Junction Tech	1	2019	4	2020
EFP Detection & Defeat	1	2020	1	2020
Booby Trapped Structures (BTS)				
Iron Horse	3	2019	1	2020
Buried IED				
Microwave Frequency Oscillator (MFO) - Mineroller	1	2019	2	2020
Spectral Polarmetric Instrument Data Analysis (SPIDA)	1	2019	4	2020
SPIDA Spiral (Automated Change Detection)	3	2020	4	2020
Home-Made Explosives (HME)				
Mini Hyper Spectral Imaging Group 3	4	2018	4	2020
Standoff Portable Isotopic Neutron Spectroscopy (SPINS)	3	2019	2	2020
Improvised Threat Device Replication				
T&E Threat Support	1	2020	4	2020
Network				
Cobalt Doom	1	2018	4	2020
Explosives attribution and exploitation (EA2)	1	2019	4	2020
Improved National Technical Means (NTM) Integration	4	2019	4	2020

Exhibit R-4A, **RDT&E Schedule Details:** PB 2023 Defense Threat Reduction Agency			**Date:** April 2022	
Appropriation/Budget Activity 0400 / 4		**R-1 Program Element (Number/Name)** PE 0604134BR / Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing	**Project (Number/Name)** JC / Enable Rapid Capability Delivery	

	Start		**End**	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
North Wind	4	2015	4	2020
Sensitive Integration Office Programs	1	2015	4	2020
Tough Luck	2	2014	4	2020
ISP	1	2021	4	2021
Person-Born IED (PBIED)				
Atomic Magnetometer	2	2019	3	2020
PBIED Sensor Integration (Tiger Paw)	1	2018	2	2020
Radio Controlled IED (RCIED)				
Songbird (Whistler Spiral)	1	2020	4	2020
RDT&E Technology Enablers				
Technical Outreach BA 4	1	2016	4	2020
Counter-small Unmanned Aerial Systems (C-sUAS)				
C-sUAS Test and Evaluation	1	2019	4	2021
GroundTaker	3	2018	4	2020
Microwave Frequency Oscillator (MFO) C-sUAS	4	2016	4	2020
Mobile C-sUAS Airborne Platform Suite (MCAPS) Spiral	2	2019	4	2020
Multi vs. Multi Airborne Dispersed	1	2020	4	2022
Multi vs. Multi Dismounted Deployed	1	2020	4	2020
Pike on Reaper	4	2019	4	2020
Tech Exploitation Tech Red Device Coordination	1	2019	4	2020
Split Aces 4.0	1	2020	4	2021
Test & Eval				
Test & Evaluation Support	1	2020	4	2020
Vehicle-Borne IED (VBIED)				
Supernova Spiral	4	2019	4	2020

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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
C-IED				
Travel	1	2018	4	2020
UK Joint Tech Development	1	2019	4	2020
VBIED Detection Sensor Integration	3	2019	4	2020
Global Data Integration				
Data Science for Emerging Threats	3	2021	3	2022
Image Recognition Proof-of-Concept	3	2021	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing	**Project (Number/Name)** JS / Assist Situational Understanding

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
JS: *Assist Situational Understanding*	29.300	1.607	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	30.907
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

DTRA MIT created and deployed a significant capability called Voltron. Voltron provides analysts access to signals intelligence (SIGINT) data within a secure and IC-accredited software developer environment. Voltron provides users a single interface to query more than 25 data sources and combines results into dynamic visualizations and exports. Voltron captures analytics techniques and provides a constantly growing toolbox providing analysts with continuously new models in support of analysis and operations. Voltron provides analysts access to methodologies involving multi-INT fusion in an easy to use interface. These methods are based on years of experience supporting the tactical targeting environment and built in collaboration with other teams across the IC. There are currently more than 75 models in Voltron available to the user community.

DTRA's authorities and mission have enabled a unique Development, Security, and Operations (DevSecOps) "Path-to-Production" to rapidly develop and deploy mission- driven IT solutions. This unique development environment includes an integrated Cyber Security Assessment and Authorization process, an in-house collateral Authorizing Official for SIPRNet and DIA-approved Authorization to Operate on JWICS, creating a strong partnership between technologists and intelligence analysts working real-world problems, and a collaborative and innovative culture that launches practical software solutions rapidly.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: JS: Assist Situational Understanding	1.607	0.000	0.000	0.000	0.000
Description: Provides testing and engineering support for COTS and GOTS intelligence analysis application and software and systems that operate on the mission enclave. Supports cybersecurity testing and security engineering of new or upgraded software and systems prior to authorization to operate on production enclaves. Sandia / SETA Capability Research Architecture Cell (CRAC) identifies, investigates, explores, evaluates, and tests prototypes of emerging and cutting edge information technology that provides superior advantage to analysts and warfighters. Sandia / CRAC builds partnerships with mission partners in DoD, IC, IA, Academia, National Labs and Industry to support, develop and integrate plans, programs, requirements, resources, technology and innovations across the mission spectrum for DTRA. Facilitates innovation, acceleration of programs, rapid response to emerging events, and rapid development and operationalization of new technologies.					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 **/** 4	**R-1 Program Element (Number/Name)** PE 0604134BR **/** *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JS **/** *Assist Situational Understanding*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: N/A					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: No change. Project activities are complete.					
Accomplishments/Planned Programs Subtotals	1.607	0.000	0.000	0.000	0.000

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

D. Acquisition Strategy
 Assessment and selection of best performer to provide contractual services to develop and operationalize requirements through the new Enterprise Acquisition Strategy Initiative (EASI) at the least risk, optimal cost and proven technically. Performer base selection includes research developers across DoD and other Government agency laboratories, academia, and industry.

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	2.435	-		0.000		0.000		0.000		0.000	0.000	2.435	-
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	C/CPAF	Booz Allen Hamilton : Reston, VA	3.653	-		0.000		0.000		0.000		0.000	0.000	3.653	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.103	-		0.000		0.000		0.000		0.000	0.000	0.103	-
IRTM	MIPR	Office of Naval Research : Arlington, VA	0.257	-		0.000		0.000		0.000		0.000	0.000	0.257	-
Network	C/FFP	John Hopkins : Baltimore, MD	1.815	-		0.000		0.000		0.000		0.000	0.000	1.815	-
Vehicle-Borne IED (VBIED)	C/CPFF	Naval Surface Warfare Command : Dahlgren, VA	8.500	-		0.000		0.000		0.000		0.000	0.000	8.500	-
		Subtotal	16.763	-		0.000		0.000		0.000		0.000	0.000	16.763	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	0.812	0.000		0.000		0.000		0.000		0.000	0.000	0.812	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency			**Date:** April 2022

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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**
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.217	0.000		0.000		0.000		0.000		0.000	0.000	1.217	-
QRC IT Network (OIR)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.456	0.000		0.000		0.000		0.000		0.000	0.000	1.456	-
QRC IT Network (RS)	C/CPAF	Booz Allen Hamilton : Reston, VA	0.348	0.000		0.000		0.000		0.000		0.000	0.000	0.348	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.346	0.000		0.000		0.000		0.000		0.000	0.000	0.346	-
Carnegie Mellon University-Software Engineering Institute (CMU-SEI)	MIPR	Carnegie Mellon University/SEI : Hanscomb AFB, MA	0.215	0.000		0.000		0.000		0.000		0.000	0.000	0.215	-
		Subtotal	4.394	0.000		0.000		0.000		0.000		0.000	0.000	4.394	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**
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	0.812	0.000		0.000		0.000		0.000		0.000	0.000	0.812	-
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability	C/CPAF	Booz Allen Hamilton : Reston, VA	1.856	0.000		0.000		0.000		0.000		0.000	0.000	1.856	-

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Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2023 Defense Threat Reduction Agency | **Date:** April 2022

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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
Development (Automation and Data Science)															
QRC IT Network (OIR)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.312	0.000		0.000		0.000		0.000		0.000	0.000	1.312	-
QRC IT Network (RS)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.264	0.000		0.000		0.000		0.000		0.000	0.000	1.264	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.618	0.000		0.000		0.000		0.000		0.000	0.000	0.618	-
SETA Capability Research Architecture Cell (CRAC)	C/CPAF	Zell Technologies : Reston, VA	2.281	1.607	Sep 2021	0.000		0.000		0.000		0.000	0.000	3.888	-
Subtotal			8.143	1.607		0.000		0.000		0.000		0.000	0.000	9.750	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	29.300	1.607	0.000	0.000	0.000	0.000	0.000	30.907	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Threat Reduction Agency		Date: April 2022
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	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
Assist Situational Understanding																												
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support																												
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)																												
QRC IT Network (OIR)																												
QRC IT Network (RS)																												
Sandia																												
SETA Capability Research Architecture Cell (CRAC)																												

	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
Assist Situational Understanding																												
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support																												
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)																												
QRC IT Network (OIR)																												
QRC IT Network (RS)																												
Sandia																												

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Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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	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
SETA Capability Research Architecture Cell (CRAC)	██	██	██	██																								

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Exhibit R-4A, **RDT&E Schedule Details:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Assist Situational Understanding				
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	4	2016	4	2019
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	4	2016	4	2019
QRC IT Network (OIR)	2	2017	2	2021
QRC IT Network (RS)	2	2017	2	2021
Sandia	1	2020	4	2021
SETA Capability Research Architecture Cell (CRAC)	4	2016	4	2021

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency								**Date:** April 2022			

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COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
RA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

During the FY 2021 execution, Catapult funding was realigned to this project to segregate this funding in preparation for the realignment of this program-of-record to the new program element PE 0604551BR.

A. Mission Description and Budget Item Justification

This project enables DTRA's Catapult Information System Program to design, develop, test, and deliver mission capabilities that support the ability to aggregate, and analyze data and information on global emerging threats and threat networks. Catapult and DTRA's Mission Information Technology (MIT) capability allows DTRA to rapidly develop, engineer, test and deploy analytical tools, threat models and simulations, data science methodologies, and software applications in support of the warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of emerging threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking, and defeating both current and emerging improvised threats and threat networks.

DTRA's MIT capability, with its embedded Combatant Command (CCMD) capability, data integrators, and reachback staff work continuously to create capabilities requested by users from the DoD, the Intelligence Community (IC), interagency partners, and the Whole of Government to ingest, fuse, analyze, and present mission relevant data and information. These capabilities reside in Catapult, a cloud technology-based data analytics platform developed and being delivered by DTRA that provides an extensible, continuously augmented, real-time repository of intelligence on improvised threats and worldwide threat actors and networks. Catapult is fully operational and accredited on the Secret Internet Protocol Router Network (SIPRNet) and Joint Worldwide Intelligence Communications System (JWICS). The Catapult architecture pulls from more than 850 data sources on SIPRNet and more than 170 data sources on JWICS. Catapult uses a set of more than 100 tools (ANTS) and services to provide national-level capabilities for data and information capture, discovery, access, aggregation, correlation, visualization, analysis, sharing, and distribution for users from the strategic level to the tactical edge.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: CWMD Cross-Cutting Technical and Information Sciences *Description:* This project enables DTRA to design, develop, test, and deliver mission capabilities that support the ability to collect, aggregate, and analyze intelligence data on global emerging threats and threat networks.	6.833	0.000	0.000	0.000	0.000

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency | **Date:** April 2022

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The project allows DTRA to rapidly develop, engineer, test, and deploy analytical tools, threat models and simulations, data science methodologies, and software applications in support of the warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of emerging threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking, and defeating both current and emerging improvised threats and threat networks.					

FY 2022 Plans:
N/A

FY 2023 Base Plans:
N/A

FY 2023 OCO Plans:
N/A

FY 2022 to FY 2023 Increase/Decrease Statement:
No change. Project activities are complete.

Accomplishments/Planned Programs Subtotals	6.833	0.000	0.000	0.000	0.000

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
• 13/0602134BR: *Improvised Threat Reduction Applied Research*	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• 25/0602718BR: *Counter Weapons of Mass Destruction Applied Research*	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
• 105/0604551BR: *Catapult*	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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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
• 159/0605502BR: *Small Business Innovation Research*	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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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
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	0.000	5.374	Aug 2021	0.000		0.000		0.000		0.000	0.000	5.374	5.374
Subtotal			0.000	5.374		0.000		0.000		0.000		0.000	0.000	5.374	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
Catapult Information System Support	C/CPAF	Booz Allen Hamilton : Reston, VA	0.000	0.515	Aug 2021	0.000		0.000		0.000		0.000	0.000	0.515	0.515
Subtotal			0.000	0.515		0.000		0.000		0.000		0.000	0.000	0.515	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
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	0.000	0.944	Aug 2021	0.000		0.000		0.000		0.000	0.000	0.944	0.944
Subtotal			0.000	0.944		0.000		0.000		0.000		0.000	0.000	0.944	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	0.000	6.833	0.000	0.000	0.000	0.000	0.000	6.833	N/A

Remarks

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Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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	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

CWMD Cross-Cutting Technical and Information Sciences

Catapult / CTN Tool Suite Program of Record Support

	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

CWMD Cross-Cutting Technical and Information Sciences

Catapult / CTN Tool Suite Program of Record Support

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Exhibit R-4A, **RDT&E Schedule Details:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CWMD Cross-Cutting Technical and Information Sciences				
Catapult / CTN Tool Suite Program of Record Support	4	2016	4	2021

Note

The Catapult program funding for FY 2022 and beyond has been realigned to PE 0604551BR. This R-4a reflects Catapult program activities through Q4 FY 2021.

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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*						

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	8.110	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing
RA: *CWMD Cross-Cutting Technical and Information Sciences*	8.110	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing

Note

Catapult activities, previously justified under program element 0604134BR, were realigned to this program element to better reflect the nature of these ongoing activities. In FY 2020, $8.110 million was appropriately executed in PE 0604134BR for the Catapult Program of Record. Within the exhibit, execution is reflected in PE 0604551BR which was newly established for Catapult beginning in FY 2022.

A. Mission Description and Budget Item Justification

This program designs, develops, tests, and delivers mission capabilities that support the ability to aggregate, and analyze data on global emerging threats and expedites DTRA's technology transition from the laboratory to operational use to reduce risk within the acquisition process. This is done by developing and deploying emerging technologies into our fully operational system through our Development, Security, and Operations (DevSecOps) pipeline.

B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	0.000	7.166	0.000	0.000	0.000
Current President's Budget	0.000	7.166	7.130	0.000	7.130
Total Adjustments	0.000	0.000	7.130	0.000	7.130
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Year	-	-	7.130	0.000	7.130

Change Summary Explanation

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

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	

Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604551BR / Catapult				Project (Number/Name) RA / CWMD Cross-Cutting Technical and Information Sciences			

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
RA: CWMD Cross-Cutting Technical and Information Sciences	8.110	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project enables DTRA's Catapult Information System Program to design, develop, test and deliver mission capabilities that support the ability to aggregate and analyze data on global emerging threats, threat actors and threat networks. Catapult allows DTRA to rapidly develop, engineer, test and deploy analytical tools, data science methodologies and software applications in support of the warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of emerging threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking and defeating both current and emerging threats and threat networks.

Catapult uses its RDT&E funding to meet user needs using tools and services that reside in Catapult, a cloud technology-based data analytics platform developed and delivered by DTRA that provides an extensible, continuously augmented, real-time repository of data on emerging threats and worldwide threat actors. Catapult is fully operational and accredited on the Secret Internet Protocol Router Network (SIPRNet) and Joint Worldwide Intelligence Communications System (JWICS). The Catapult architecture pulls from more than 850 data sources on SIPRNet and more than 170 data sources on JWICS. Catapult uses ANTS tools and services to provide national-level capabilities for data and information capture, discovery, access, aggregation, correlation, visualization, analysis, sharing, and distribution for users from the strategic level to the tactical edge.

This project achieves transformational mission capabilities and postures the Agency to meet emerging mission requirements through innovative technology solutions and service upgrades.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RA: CWMD Cross-Cutting Technical and Information Sciences	0.000	7.166	7.130	0.000	7.130
Description: This project enables DTRA's Catapult Information System Program to design, develop, test, and deliver mission capabilities that support the ability to aggregate and analyze data on global emerging threats. Catapult allows DTRA to rapidly develop, engineer, test and deploy analytical tools, data science methodologies and software applications in support of the warfighter. The project achieves transformational mission capabilities and postures the Agency to meet emerging mission requirements through innovative technology solutions and service upgrades.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: - Develop predictive Data Science models through supervised and unsupervised Machine Learning against current and emerging threats; including fusion of multi-INT data across unclassified and classified data sets to identify networks and locations of interest to DTRA and its mission partners. - Create a new development environment to enable "technology at the edge" to support real-time development of new Data Science models/algorithms at mission partner sites to enhance existing or future Catapult Machine Learning models. - Implement role-based access control and dynamic query analytics across Catapult data through Elastic Search to enable users to quickly retrieve known affiliates, family members, contacts, aliases, email addresses and other information about entities and enemy threat networks without running additional queries. - Create "Functions as a Service" by commoditizing common used functions and analytics across the ANTS to enable scalability and elasticity across the tool suite allowing ANTS capabilities to execute analytics against larger and more diverse data sets. - Extend Catapult architecture to allow for shared services across Whole of Government to enable analytics to be re-used in other platforms and tools across various IC and DoD organizations. - Develop Active Learning interface and pipeline to enable crowdsourced input for training and tagging data to feed new Data Science machine learning models. - Modularize Catapult's Data Processing Framework to enable targeted data transformation based on data source, artifact mime type, artifact size or any number of other source specific properties. Add better processing support for structured data, imagery, financial, SIGINT, Measurement and Signature Intelligence (MASINT), Internet of Things (IoT) and cyber data to broaden the scope of the Catapult Analytics stack. - Determine the capabilities that go beyond simple content identification and labeling, and move toward understanding the story and context of the video or image. - Determine unsupervised and supervised techniques to cluster relevant information, and enable accurate insight for analysts to improve the understanding of (1) themes, (2) intent of extracted text, (3) topics, (4) authenticity, etc. within the given data set(s) (Natural Language Processing – Understanding and Context). - Improve processing with alternative hardware (neuromorphic processors, Field Programmable Gate Arrays, etc.) by determining the best next generation hardware designed to maximize the runtime efficiency, accuracy and limited space/power consumption of select Artificial Intelligence/Machine Learning (AI/ML) solutions. ***FY 2023 Base Plans:***					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Develop predictive Data Science models through supervised and unsupervised Machine Learning (ML) against current and emerging threats; including fusion of multi-INT data across unclassified and classified data sets to identify networks and locations of interest to DTRA and its mission partners. - Integrate ML-driven application features into ANTS capabilities, such as ML JavaScript libraries, to enhance human-centered design of applications and tailor individual access to applications to improve user experience. - Develop an Active Learning-enabled extension to the data annotation platform to accelerate preparation of training sets for both new and retrained machine learning models. - Develop a Named Entity Recognition (NER) enhancement using machine learning techniques to expand the scope of captured entities, including events, location features, person attributes and affiliations. - Integrate a query expansion capability to automatically recommend keywords in the corpus of documents as users are typing queries; accelerate document discovery and enhance information retrieval features in ANTS applications. - Automate the process of labeling data for supervised machine learning by integrating labeling functions or custom recipes. - Modernize the Catapult data model using JADC2-recognized formats, such as National Information Exchange Model (NIEM), or other open and recognized data model standards to improve the cross-compatibility of the Catapult corpus with other data repositories in the DoD. - Standardize open API services to adhere to JADC2 recommendations to improve data accessibility by using familiar lexicon, formats and techniques for retrieving data by data-as-a-service subscribers and citizen data scientists. - Develop the Next Generation of the Catapult Information System to align to the Joint All Domain Command and Control and Joint Warfighting Concept. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The decrease from FY 2022 to FY 2023 is due to the realignment of information technology engineering and implementation funding to RA: CWMD Cross-Cutting Technical and Information Sciences in program element 0602718BR.					
Accomplishments/Planned Programs Subtotals	0.000	7.166	7.130	0.000	7.130

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / Catapult	**Project (Number/Name)** RA / CWMD Cross-Cutting Technical and Information Sciences

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
• 12/0602134BR: *Improvised Threat Reduction Applied Research*	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449
• 23/0602718BR: *CWMD Applied Research*	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	0.000	0.000
• 32/0603160BR: *CWMD Advanced Technology Development*	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	0.000	0.000
• 95/0604134BR: *Counter Improvised- Threat Technology Demonstration, Prototype Development and Testing*	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
• 159/0605502BR: *Small Business Innovation Research*	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.241

Remarks
 N/A

D. Acquisition Strategy

 Assessment and selection of best performers to provide contractual services to develop and operationalize requirements through the new contract vehicle (IMAX) at the least risk, optimal cost and proven technically. Performer base selection includes research developers across DoD and other Government agency laboratories, academia, and industry.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / Catapult	**Project (Number/Name)** RA / CWMD Cross-Cutting Technical and Information Sciences

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
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	5.218	0.000		5.969	Jul 2022	6.140	Jul 2023	0.000		6.140	Continuing	Continuing	-
Subtotal			5.218	0.000		5.969		6.140		0.000		6.140	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
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	0.917	0.000		0.000		0.000		0.000		0.000	0.000	0.917	0.917
Subtotal			0.917	0.000		0.000		0.000		0.000		0.000	0.000	0.917	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
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	0.500	0.000		0.963	Jul 2022	0.990	Jul 2023	0.000		0.990	Continuing	Continuing	-
SETA - Capability Research Architecture Cell (CRAC)	C/CPAF	TBD : Ft. Belvoir, VA	1.475	0.000		0.000		0.000		0.000		0.000	0.000	1.475	-
TACEON	C/CPAF	TBD : TBD	0.000	0.000		0.234		0.000		0.000		0.000	0.000	0.234	-
Subtotal			1.975	0.000		1.197		0.990		0.000		0.990	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	8.110	0.000	7.166	7.130	0.000	7.130	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency								**Date:** April 2022	
Appropriation/Budget Activity 0400 *I* 4			**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*			**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*			
	Prior Years	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**Cost To Complete**	**Total Cost**	**Target Value of Contract**
Remarks									

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Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

	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
Catapult and Technology Analysis																												
Catapult / Attack the Network Tool Suite (ANTS) Support																												

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Exhibit R-4A, **RDT&E Schedule Details:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 4	**R-1 Program Element (Number/Name)** PE 0604551BR *I Catapult*	**Project (Number/Name)** RA *I CWMD Cross-Cutting Technical and Information Sciences*

Schedule Details

Events by Sub Project	Start		End	
	Quarter	**Year**	**Quarter**	**Year**
Catapult and Technology Analysis				
Catapult / Attack the Network Tool Suite (ANTS) Support	4	2022	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency											Date: April 2022	

| Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5:
System Development & Demonstration (SDD) | | | | | R-1 Program Element (Number/Name)
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.

PE 0605000BR: *Counter Weapons of Mass Destruction Syst...*
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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

Appropriation/Budget Activity 0400 *I* 5				**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*				**Project (Number/Name)** RD *I 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 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD *I 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. *FY 2022 Plans:* - Improve and expand the NWE M&S capabilities available to be integrated in the NuCS and ECA programs for delivery to end-user programs. - Demonstrate newly-integrated NWE M&S capabilities and establish priorities for improving and delivering these capabilities through early user assessment engagements with end-users. - 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. - Conduct Research and Development in support of U.S. IMS sites globally. - Provide upgrades to U.S. IMS sites globally, as required. *FY 2023 Base Plans:* Nuclear Signature Monitoring – Signature Evaluation: - Develop geographically expanded monitoring capability and algorithms for detection of new threats, Conventional-Nuclear Integration (CNI), and verification of covert nuclear signatures. - 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. - Characterize waveform signals from Cooperative Threat Reduction leveraged large-scale high-explosive tests at Soviet test sites to reduce uncertainty in nuclear effects models. International Monitoring System (IMS) - Signature Exploitation / Dual Use: - 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. - Improve and reduce uncertainty of infrasound propagation models for both IMS and other strategic DoD missions. - Expand characterization of waveform signals application to military mission and reduce uncertainty in nuclear effects models through detailed analysis of high-explosive coupling experiments. Nuclear Signature Monitoring - Signature Availability/System Performance:					

PE 0605000BR: *Counter Weapons of Mass Destruction Syst...*
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 I 5	**R-1 Program Element (Number/Name)** PE 0605000BR I *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD I *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. - Design the next-generation particulate monitoring station for dual-use to support both IMS and other strategic DoD missions. - Increase nuclear and radionuclide data provided from existing networks and sensors through the DTRA Joint Operations Center (JOC) to support Combatant Commands (CCMDs). *FY 2023 OCO Plans:* N/A *FY 2022 to FY 2023 Increase/Decrease Statement:* 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.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency			Date: April 2022	

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / Counter Weapons of Mass Destruction Systems Development	Project (Number/Name) 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 0400 I 5			R-1 Program Element (Number/Name) PE 0605000BR I Counter Weapons of Mass Destruction Systems Development			Project (Number/Name) RD I Nuclear Technologies and Capabilities Development	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
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 0400 *I* 5						**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*					**Project (Number/Name)** RD *I 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 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD *I 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
Enhanced Consequence Analysis (ECA)																												
Assessment of software readiness, strategic and operational planning networks, and DoD and Allied requirements																						▬	▬					
Development of initial ECA decision support capability and establishment of software development pipeline for future capability enhancements																								▬	▬			
Test and evaluation of ECA integrated nuclear weapon effects models in preparation for deployment on strategic and operational planning networks																									▬			
Deployment of ECA decision support tools on DoD and Allied strategic and operational planning networks																												
Update ECA decision support tools and integrate new nuclear weapon effects models once mature and available to meet DoD and Allied planning requirements																												
Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools																												
/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 Test and evaluation of ECA integrated nuclear weapon effects models in preparation																												

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

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	Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency																													**Date:** April 2022

| **Appropriation/Budget Activity** 0400 *I* 5 | | | | | | | | | | | **R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development* | | | | | | | | | | | | **Project (Number/Name)** RD *I 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 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD *I Nuclear Technologies and Capabilities Development*

	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

Enhanced Consequence Analysis (ECA)

Assessment of software readiness, strategic and operational planning networks, and DoD and Allied requirements

Development of initial ECA decision support capability and establishment of software development pipeline for future capability enhancements

Test and evaluation of ECA integrated nuclear weapon effects models in preparation for deployment on strategic and operational planning networks

Deployment of ECA decision support tools on DoD and Allied strategic and operational planning networks

Update ECA decision support tools and integrate new nuclear weapon effects models once mature and available to meet DoD and Allied planning requirements

Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools

/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 Test and evaluation of ECA integrated nuclear weapon effects models in preparation

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

	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
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 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605000BR *I Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD *I Nuclear Technologies and Capabilities Development*

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	5.500	5.500	14.093	0.000	14.093	9.316	9.440	9.573	9.702	Continuing	Continuing
MA: *Mission Assurance Risk Management System*	0.000	5.500	5.500	14.093	0.000	14.093	9.316	9.440	9.573	9.702	Continuing	Continuing

A. Mission Description and Budget Item Justification

MARMS is a Department of Defense (DoD) risk management system that directly supports the Secretary of Defense Mission Assurance (MA) responsibilities as defined in the DoD Directive (DoDD) 3020.40, Mission Assurance, with the objectives of creating resilience and supporting critical processes to enable the protection of assets and ensuring defense critical missions across 17 Mission Assurance Related Programs and Activities (MARPA). MARMS functions as an integration framework spanning multiple security domains that will support risk-informed decision-making, resource investment, and improved synchronization at different levels within DoD. MARMS supports multiple Joint Capability Areas (JCA): Command and Control, Logistics, and Protection. MARMS is a joint program and an acquisition category (ACAT) Ill software-intensive and situational awareness program in the agile-based Adaptive Acquisition Framework – Software Pathway (AAF-SWP). MARMS has Risk Management Framework (RMF) security controls in place to protect the Mission Assurance data with a "high" impact value for confidentiality and integrity, and "medium" for the availability security objectives in accordance with DoD Instruction (DoDI) 8510.01 and the Committee on National Security Systems Instruction (CNSSI) 1253.

B. Program Change Summary ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	5.500	5.500	0.000	0.000	0.000
Current President's Budget	5.500	5.500	14.093	0.000	14.093
Total Adjustments	0.000	0.000	14.093	0.000	14.093
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Year	-	-	14.093	0.000	14.093

Change Summary Explanation

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

PE 0605141BR: *Mission Assurance Risk Management System...*
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency										Date: April 2022	
Appropriation/Budget Activity 0400 I 5				R-1 Program Element (Number/Name) PE 0605141BR I Mission Assurance Risk Management System (MARMS)					Project (Number/Name) MA I Mission Assurance Risk Management System		

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
MA: *Mission Assurance Risk Management System*	0.000	5.500	5.500	14.093	0.000	14.093	9.316	9.440	9.573	9.702	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MARMS is a Department of Defense (DoD) risk management system that directly supports the Secretary of Defense's Mission Assurance (MA) responsibilities as defined in the DoD Directive (DoDD) 3020.40, Mission Assurance, with the objectives of creating resilience and supporting critical processes to enable the protection of assets and ensuring defense critical missions. MARMS will function as an integration framework spanning multiple security domains that will support risk-informed decision-making, resource investment, and improved synchronization at different levels within DoD. MARMS supports multiple Joint Capability Areas (JCA): Command and Control, Logistics, and Protection. MARMS is an acquisition category (ACAT) III software program and has a "high" impact value for confidentiality and integrity, and "medium" for the availability security objective in accordance with DoD Instruction (DoDI) 8510.01 and the Committee on National Security Systems Instruction (CNSSI) 1253.

B. Accomplishments/Planned Programs ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: MA - Mission Assurance Risk Management System *Description:* MARMS is a multi-year enduring program that will federate a family of MA systems to be integrated as an enterprise solution defined in the MARMS Information System Initial Capabilities Document (IS-ICD) and Requirements Definition Package (RDP) for Increment 1. The RDP-1 defines multiple spirals of major technological improvements. Each spiral is comprised of multiple Capability Drops (CD) that define specific capabilities. RDP-1 defines seven capability drops focusing on the collection, analysis, warehousing, sharing, protection, and accessing of Defense Critical Infrastructure (DCI) and Anti-Terrorism (AT) data to support risk-informed decision making, resource investment and improve synchronization across Mission Assurance-related programs for Increment 1. *FY 2022 Plans:* - Continue to improve the capability of the Information Sharing Registry (CD1) toward overall program initial capability fielding of DCI and AT risk data at the end of FY 2022. - Modernize and integrate assessment capabilities, existing systems, and the Mission Assurance Viewer and Analysis Portal on SIPR (CD2, CD3, and CD4). - Begin modernization and integration of the Mission Assurance Viewer and Analysis Portal on JWICS (CD5) toward initial capability fielding in 4th Quarter FY 2022.	5.500	5.500	14.093	0.000	14.093

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022	
Appropriation/Budget Activity 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA *I Mission Assurance Risk Management System*	

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
- Begin modernization and integration of Cross Domain Solution – SIPR to JWICS (CD6) in 1st Quarter FY 2022 and JWICS to SIPR (CD7) in 1st Quarter FY2023. ***FY 2023 Base Plans:*** - Develop MARMS Increment 2 adding integration of DoD risk-based data for next three Mission Assurance Related Programs and Activities (MARPAs): DoD Cybersecurity, Energy Resilience (ER), & Emergency Management (EM). - Develop base capability (Data Registry, Enterprise Viewer, Cross Domain) for new Unclassified MARMS Architecture to support three new MARPAs. - Develop enhancements to existing Unclassified/SIPR/Top Secret systems that support the new MARPAs. - Transition from USAF EPRM to an alternate platform. - Establish new hosting, accreditation, and development as needed to supporting AT and DCI assessments. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY 2022 to FY 2023 is due to increased investment for new MARMS capabilities required to support the alignment of risk-based data for three new Mission Assurance Related Programs and Activities (MARPAs), Emergency Management (EM), Energy Resilience (ER), and Cybersecurity, which have new requirements for unclassified MARMS information technology (IT) solutions.					
Accomplishments/Planned Programs Subtotals	5.500	5.500	14.093	0.000	14.093

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

D. Acquisition Strategy
 The acquisition strategy for MARMS is based on its designation as a joint DoD program and being a software-intensive and situational awareness program. Therefore, it is aligned to follow the acquisition construct defined by the agile-based DoDI 5000.87 Adaptive Acquisition Framework – Software Pathway (AAF-SWP). In order to accomplish the Mission Assurance Strategy and Policy of aligning and integrating the risk based data for the 17 Mission Assurance Related Programs and Activities (MARPA), the MARMS PMO will build on the initial foundational/baseline information technology capabilities and data integration investments for Increments 1 and 2 for the remaining MARPAs per the guidance of the Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance (DASD-DC&MA) and the Joint

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA *I Mission Assurance Risk Management System*
Staff J36 Mission Assurance Branch. Joint Capabilities Integration and Development System (JCIDS) IT-Box terminology of Modernize and Integrate, IOC/FOC, will be phased out with continuous Development, Security, and Operations (DevSecOps) as an enduring program.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency												Date: April 2022	

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mission Assurance and Risk Management System (MARMS) Secret Internet Protocol Router (SIPR) Hosting	MIPR	U.S. Army ALTESS : Radford, VA	0.000	0.000		0.120	Dec 2021	0.130	Dec 2022	0.000		0.130	Continuing	Continuing	-
MARMS Unclassified Hosting	C/TBD	TBD : TBD	0.000	0.000		0.000		0.600	Feb 2024	0.000		0.600	Continuing	Continuing	-
MARMS SIPR Hosting - COOP	C/TBD	TBD : TBD	0.000	0.000		0.000		0.100	Feb 2023	0.000		0.100	Continuing	Continuing	-
MARMS JWICS Hosting	C/TBD	Central Intelligence Agency : Langley, VA	0.000	0.000		0.000		0.100	Feb 2023	0.000		0.100	Continuing	Continuing	
Capability Drop (CD) 1 - Information Sharing	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	0.000	2.795	Nov 2020	1.560	Nov 2021	3.560	Nov 2022	0.000		3.560	Continuing	Continuing	-
CD2 EPRM Engineering COA	C/TBD	TBD : TBD	0.000	0.000		0.000		1.500	Feb 2023	0.000		1.500	Continuing	Continuing	-
CD2 - Assessment Capability	MIPR	USAF : Washington, DC	0.000	0.500	Feb 2021	0.590	Nov 2021	1.600	Nov 2022	0.000		1.600	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	Naval Surface Warfare Center (NSWC) : Dahlgren	0.000	0.640	Feb 2021	0.620	Feb 2022	0.700	Feb 2023	0.000		0.700	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	USSTRATCOM : Omaha, NE	0.000	0.250	Nov 2020	0.250	Dec 2021	0.250	Dec 2022	0.000		0.250	Continuing	Continuing	-
CD4 - Workspace/Viewer on Secret Internet Protocol Router Network (SIPR)	C/CPFF	Appddiction, Inc. : Fort Belvoir, VA	0.000	0.420	Feb 2021	0.840	Feb 2022	0.900	Feb 2023	0.000		0.900	Continuing	Continuing	-
CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	Appddiction, Inc. : Fort Belvoir, VA	0.000	0.420	Feb 2021	0.790	Feb 2022	0.900	Feb 2023	0.000		0.900	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency													Date: April 2022	
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Product Development ($ 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**
CD6 - Cross Domain Solution SIPR to JWICS	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	0.000	0.350	Feb 2021	0.100	Feb 2022	0.100	Feb 2023	0.000		0.100	Continuing	Continuing	-
CD7 - CD6 - Cross Domain Solution JWICS to SIPR	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	0.000	0.125	Feb 2021	0.000		0.000		0.000		0.000	Continuing	Continuing	-
CD8 - Registry & Workspace/Viewer on Unclassified Internet Protocol Router Network (NIPR)	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	0.000	0.000		0.000		2.000	Apr 2023	0.000		2.000	Continuing	Continuing	-
CD9 - Unclassified Data Management & Cross Domain Solution NIPR to Higher Domains	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	0.000	0.000		0.000		1.000	Apr 2023	0.000		1.000	Continuing	Continuing	-
		Subtotal	0.000	5.500		4.870		13.440		0.000		13.440	Continuing	Continuing	N/A

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**
Program Management Office Subject Matter Expertise Support	FFRDC	Institute for Defense Analysis : Ft. Belvoir, VA	0.000	0.000		0.380	Nov 2021	0.390	Nov 2022	0.000		0.390	Continuing	Continuing	-
Program Management Office Subject Matter Expertise Support	C/TBD	TBD : Ft. Belvoir, VA	0.000	0.000		0.250	May 2022	0.263	May 2023	0.000		0.263	Continuing	Continuing	-
		Subtotal	0.000	0.000		0.630		0.653		0.000		0.653	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	0.000	5.500		5.500		14.093	0.000	14.093	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Threat Reduction Agency									Date: April 2022

Appropriation/Budget Activity 0400 *I* 5				R-1 Program Element (Number/Name) PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*			Project (Number/Name) MA *I Mission Assurance Risk Management System*			

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Remarks									

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Exhibit R-4, **RDT&E Schedule Profile:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA *I Mission Assurance Risk Management System*

	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
Mission Assurance and Risk Management (MARMS)																												
Hosting for MARMS (Consolidated)																												
Capability Drop (CD) 1: Information Sharing Registry																												
CD 2: Assessment Capability – Enterprise Protection Risk Management System (EPRM) (to include new engineering task)																												
CD 3: System Upgrades – Mission Decomposition and Asset Dependency Module –Mission Assurance Decision Support System (MADSS)																												
CD 3: System Upgrades - Asset Management Module – Strategic Mission Assurance Database System (SMADS)																												
CD 4: Workspace/Viewer on SIPR																												
CD 5: Workspace/Viewer on JWICS																												
CD 6: Cross Domain Solution - SIPR to JWICS																												
CD 7: Cross Domain Solution - JWICS to SIPR																												
CD 8: Registry & Workspace/Viewer on NIPR																												
CD 9: Unclassified Data Management & Cross Domain Solution NIPR to Higher Domains																												
PMO SME Support																												

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Exhibit R-4A, **RDT&E Schedule Details:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 5	**R-1 Program Element (Number/Name)** PE 0605141BR *I Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA *I Mission Assurance Risk Management System*

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Mission Assurance and Risk Management (MARMS)				
Hosting for MARMS (Consolidated)	1	2022	4	2027
Capability Drop (CD) 1: Information Sharing Registry	1	2021	4	2027
CD 2: Assessment Capability – Enterprise Protection Risk Management System (EPRM) (to include new engineering task)	1	2021	4	2027
CD 3: System Upgrades – Mission Decomposition and Asset Dependency Module – Mission Assurance Decision Support System (MADSS)	1	2021	4	2027
CD 3: System Upgrades - Asset Management Module – Strategic Mission Assurance Database System (SMADS)	1	2021	4	2027
CD 4: Workspace/Viewer on SIPR	1	2021	4	2027
CD 5: Workspace/Viewer on JWICS	1	2021	4	2027
CD 6: Cross Domain Solution - SIPR to JWICS	1	2021	3	2024
CD 7: Cross Domain Solution - JWICS to SIPR	1	2022	4	2027
CD 8: Registry & Workspace/Viewer on NIPR	3	2023	4	2027
CD 9: Unclassified Data Management & Cross Domain Solution NIPR to Higher Domains	3	2023	4	2027
PMO SME Support	1	2022	4	2027

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency											**Date:** April 2022	

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605502BR *I Small Business Innovation Research*

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	95.496	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
RA: *Information Sciences and Applications*	95.496	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

Funding for the ongoing SBIR/STTR program is consolidated in this program element during the year of execution.

A. Mission Description and Budget Item Justification

The Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs provide the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting the Department of Defense (DoD) research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of the DoD supported research and development results. These efforts are responsive to Public Law 106-554.

B. Program Change Summary ($ in Millions)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	14.241	0.000	0.000	0.000	0.000
Total Adjustments	14.241	0.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	14.241	0.000			

Change Summary Explanation

Funding for the SBIR program is consolidated in this program element during the year of execution.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 6	**R-1 Program Element (Number/Name)** PE 0605502BR *I Small Business Innovation Research*	**Project (Number/Name)** RA *I Information Sciences and Applications*

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
RA: *Information Sciences and Applications*	95.496	14.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

 *Funding is not allocated until the year-of-execution. Program Element 0605502BR "Small Business Innovation Research (SBIR)" is used to report year-end execution. FY 2022 and FY 2023 plans are provided based on estimated SBIR/STTR funding levels to be determined in accordance with the law and relative to final Agency RDT&E portfolio appropriations.

A. Mission Description and Budget Item Justification

 The Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs provide the means for stimulating technological innovation in the private sector and strengthens the role of small business in meeting the Department of Defense (DoD) research and development needs. These programs foster and encourage participation of minority and disadvantaged businesses in technological innovation and increase the commercial application of DoD supported research and development results. These efforts are responsive to Public Law 106-554 Small Business Act (15 U.S.C. 638).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: RA: Information Sciences and Applications *Description:* This project provides the means for stimulating technological innovation in the private sector; strengthens the role of small business in meeting the DoD research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of the DoD supported research and development results. These efforts are responsive to Public Law 106-554. *FY 2022 Plans:* Nine Small Business Innovation Research projects ($12.291M) are planned to address: - Developing radiation dose advisory technology; developing pedigree reconstruction capabilities to identify terrorist networks; for the use of transient electric field measurements as test diagnostics; for nuclear scintillation mitigation by matched channel; and radiation-resistant and temperature-insensitive solid state photomultipliers.	14.241	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2023 Defense Threat Reduction Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*	**Project (Number/Name)** RA / *Information Sciences and Applications*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total

- SBIR research projects will also address technology concepts for distributed, cooperative, learning for subterranean robotic autonomous systems; global nano aerial terrestrial sensing for radiation/nuclear detection; applying lifecycle management and continuous integration for pre-exascale high performance computing architectures; advanced optics based magnetic field diagnostics for nuclear weapon effects testing; developing algorithms that can locally link radiation detectors to enhance identification/ localization capability; augmented reality and virtual reality capabilities; and develop modern low visibility Radio Frequency (RF) capabilities.

Additional research areas ($2.258M) will be determined in March 2022 in conjunction with the upcoming OSD Broad Agency Announcement.

Five STTR Innovation Research Technology projects ($2.046M) are to develop technology for synthetic aperture radar image generation data augmentation, develop numeric-informed neural networks, and develop mathematical models to build multi-radiation detector algorithms. An additional $1.100M project will be down-selected from current on-going research efforts.

FY 2023 Base Plans:
SBIR projects ($2.900M) will address requirements for areas of research that will be selected in March 2022 and others later in the year in accordance with the OSD SBIR FY 2022.3 Broad Agency Announcements.

More mature technology projects ($11.100M) will focus in the areas of Artificial Intelligence/Machine Learning edge computing-based solutions in forward deployed cell phones and associated equipment; technology for distributed and cooperative learning for subterranean robotic autonomous systems; global nanotechnology aerial/terrestrial sensing for radiation/nuclear detection technology; pre-exascale high performance computing architectures; advanced optics-based magnetic field diagnostics for nuclear weapon effects testing; developing algorithms that can locally link radiation detectors (of different resolutions) to enhance identification/localization capability; augmented reality and virtual reality capabilities; and, modernized low-visibility RF capabilities.

STTR project ($2.000 million) requirements are yet to be determined. These topics will be developed in accordance with the overarching OSD Broad Agency Announcements.

FY 2023 OCO Plans:
N/A

FY 2022 to FY 2023 Increase/Decrease Statement:

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 *I* 6	**R-1 Program Element (Number/Name)** PE 0605502BR *I Small Business Innovation Research*	**Project (Number/Name)** RA *I Information Sciences and Applications*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
N/A					
Accomplishments/Planned Programs Subtotals	14.241	0.000	0.000	0.000	0.000

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
• 13/0602134BR: *Improvised Threat Reduction Applied Research*	2.449	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.449
• 25/0602718BR: *Counter Weapons of Mass Destruction Applied Research*	36.288	48.112	32.670	0.000	32.670	39.918	40.914	32.639	33.543	Continuing	Continuing
• 34/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	50.959	84.660	78.991	0.000	78.991	84.775	86.706	84.214	84.684	Continuing	Continuing
• 98/0604134BR: *Counter Improvised- Threat Technology Demonstration, Prototype Development and Testing*	6.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.833
• 105/0604551BR: *Catapult*	0.000	7.166	7.130	0.000	7.130	7.328	7.475	7.625	7.777	Continuing	Continuing

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2, **RDT&E Budget Item Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*					**R-1 Program Element (Number/Name)** PE 0606853BR *I Management Technical and International 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
Total Program Element	-	0.000	0.000	12.354	0.000	12.354	11.919	12.115	12.358	12.605	Continuing	Continuing
MN: *Defense Critical Infrastructure - Mission Assurance*	0.000	0.000	0.000	12.354	0.000	12.354	11.919	12.115	12.358	12.605	Continuing	Continuing

Note

This new program element supports the development of a series of advanced analytic efforts to more effectively identify risks and threats to Surge Layer Defense and, more broadly, DoD's Mission Assurance (MA) as identified in the current National Defense Strategy. This is a new start.

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA), as the DoD Center of Excellence for Mission Assurance Assessments, has been tasked by Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance (DASD (DC&MA)) with leading change within the MA community on behalf of OSD to ensure best practices are documented during the Joint Mission Assurance Assessments (JMAA), Balanced Survivability Assessments (BSA), and Red Team Assessments. Including but not limited to dependency analysis, asymmetric threats, cyber operations, general engineering, security operations, and emergency management.

In partnership with the Homeland Advanced Analytic Capability (HAAC) program and the U.S. Department of the Navy of Defense Critical Infrastructure - Mission Assurance program, DTRA's Mission Assurance program will perform mission analysis; engineering and commercial infrastructure network interdependency analysis; MA assessments; information enterprise design, implementation, and support; and defense industrial base supply chain network and related analysis. Providing broad leadership, best practices, research, development, coordination, and support to DoD Components around specific focus areas to drive solution-oriented efficiencies, collaboration, and results that benefit the entire DoD MA enterprise.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Threat Reduction Agency				**Date:** April 2022	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 6: *RDT&E Management Support*			**R-1 Program Element (Number/Name)** PE 0606853BR *I Management Technical and International Support*		

B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	12.354	0.000	12.354
Total Adjustments	0.000	0.000	12.354	0.000	12.354
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Increase for Defense Critical Infrastructure	-	-	12.354	0.000	12.354

Change Summary Explanation

The increase from the FY 2022 President's Budget is a consolidation of DoD MA Enterprise funding from the U.S. Department of the Navy of Defense Critical Infrastructure - Mission Assurance program and Defense Wide activities to DTRA to establish the Homeland Advanced Analytic Capability (HAAC) program.

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency										**Date:** April 2022	

Appropriation/Budget Activity 0400 / 6				**R-1 Program Element (Number/Name)** PE 0606853BR / *Management Technical and International Support*				**Project (Number/Name)** MN / *Defense Critical Infrastructure - Mission Assurance*			

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
MN: *Defense Critical Infrastructure - Mission Assurance*	0.000	0.000	0.000	12.354	0.000	12.354	11.919	12.115	12.358	12.605	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This new program element supports the development of a series of advanced analytic efforts to more effectively identify risks and threats to Surge Layer Defense and, more broadly, DoD's Mission Assurance (MA) as identified in the current National Defense Strategy. This is a new start.

A. Mission Description and Budget Item Justification

This project supports the development of a series of advanced analytic efforts to more effectively identify risks and threats to Surge-Layer Defense and, more broadly, DoD's Mission Assurance (MA) as identified in the current National Defense Strategy.

The Defense Threat Reduction Agency (DTRA) as the DoD Center of Excellence for Mission Assurance Assessments has been tasked by Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance (DASD (DC&MA)) with leading change within the MA community on behalf of OSD to ensure best practices are documented during Joint Mission Assurance Assessments, Balanced Survivability Assessments, and Red Team Assessments. Including but not limited to dependency analysis, asymmetric threats, cyber operations, general engineering, security operations, and emergency management.

In partnership with the Homeland Advanced Analytic Capability (HAAC) program and the U.S. Department of the Navy's Defense Critical Infrastructure - Mission Assurance program, DTRA's Mission Assurance program will perform mission analyses; engineering, and commercial infrastructure network interdependency analyses; MA assessments; information enterprise design, implementation, and support; and defense industrial base supply chain network and related analysis. Providing broad leadership, best practices, research, development, coordination, and support to DoD Components around specific focus areas to drive solution-oriented efficiencies, collaboration, and results that benefit the entire DoD MA enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: MN - Defense Critical Infrastructure - Mission Assurance	0.000	0.000	12.354	0.000	12.354
Description: This program establishes an integrated and comprehensive approach to deliver vastly improved threat data and operational support to the DoD mission assurance enterprise.					
FY 2022 Plans:					

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Exhibit R-2A, **RDT&E Project Justification:** PB 2023 Defense Threat Reduction Agency		**Date:** April 2022
Appropriation/Budget Activity 0400 **/** 6	**R-1 Program Element (Number/Name)** PE 0606853BR **/** *Management Technical and International Support*	**Project (Number/Name)** MN **/** *Defense Critical Infrastructure - Mission Assurance*

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
N/A ***FY 2023 Base Plans:*** - Provide oversight and program management of the HAAC program in coordination with Office of the Under Secretary of Defense for Policy (OUSD(P)), the U.S. Navy, and the U.S. Air Force. - Provide HAAC products to facilitate DoD dependency analysis, vulnerability, and risk assessments. - Develop innovative infrastructure network interdependency analysis while identifying and prioritizing threats and risks to DoD's critical infrastructure. ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The increase from FY 2022 to FY 2023 is due to a consolidation of DoD MA Enterprise funding from the U.S. Department of the Navy's Defense Critical Infrastructure - Mission Assurance program and Defense Wide activities to DTRA to establish the Homeland Advanced Analytic Capability (HAAC) program.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	12.354	0.000	12.354

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

D. Acquisition Strategy
 N/A

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