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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency **Date:** May 2021

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	371.009	325.640	356.659	399.362	-	399.362	-	-	-	-	-	-
RA: <i>CWMD Cross-Cutting Technical and Information Sciences</i>	86.940	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
RD: <i>Nuclear Technologies and Capabilities Development</i>	86.139	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-
RG: <i>Counter WMD Technologies and Capabilities Development</i>	197.930	201.756	259.006	259.762	-	259.762	-	-	-	-	-	-
RR: <i>CWMD Test and Evaluation</i>	0.000	0.160	0.000	4.523	-	4.523	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Advanced Technology Development portfolio is aligned with strategic planning 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.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	330.065	366.659	340.184	-	340.184
Current President's Budget	325.640	356.659	399.362	-	399.362
Total Adjustments	-4.425	-10.000	59.178	-	59.178
• Congressional General Reductions	-	-15.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.713	-			
• SBIR/STTR Transfer	-8.138	-			
• Realignment	-	-	59.178	-	59.178

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: RG: *Counter WMD Technologies and Capabilities Development*

Congressional Add: *Strategic Systems Defeat*

	FY 2020	FY 2021
	0.000	5.000
Congressional Add Subtotals for Project: RG	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Change Summary Explanation

The increase in FY 2022 from the previous President's Budget is due to 1) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PEs 0603134BR and 0604134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences for Technology-Driven CWMD Capability Development and Evaluation activities to develop cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD by anticipating new threats while responding to current and evolving threats, 2) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to Project RR - CWMD Test and Evaluation to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts to facilitate transition of CWMD development capabilities into the next stage of development, 3) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to Project RG - Counter WMD Technologies and Capabilities Development, 4) the realignment of resources to O&M for specialized counter-terrorism activities to operationalize forecasting methodologies, and 5) a downward adjustment for revised economic assumptions (inflation). In FY 2021, there was a congressional add for Strategic Systems Defeat in this project.

UNCLASSIFIED

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Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>				Project (Number/Name) RA / <i>CWMD Cross-Cutting Technical and Information Sciences</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RA: <i>CWMD Cross-Cutting Technical and Information Sciences</i>	86.940	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
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 2020	FY 2021	FY 2022
Title: RA: CWMD Cross-Cutting Technical and Information Sciences	61.317	46.837	84.660
Description: Project RA develops modeling and simulation capabilities and provides technical reachback support to maintain and increase decision advantage for the United States and its allies through improved situational understanding across the complete CWMD mission space.			
FY 2021 Plans:			
- Develop processes, capabilities and expertise in order to deliver rapid responses to Requests for Information as DOD's only resource providing 24/7/365 WMD subject matter expertise and analyses to customers across the full spectrum of Chemical, Biological, Radiological, Nuclear, and high yield Explosives (CBRNE) in support of Combatant Command (CCMD) plans and operations.			
- Develop the global synthetic population and activity database for modeling infectious disease propagation and impacts of population behaviors and movement after a WMD event in support of CCMD force health protection and consequence management planning.			
- Utilize acquisition expertise, innovation tools, and agile contract solutions to deliver capabilities to the warfighter as urgent operational requirements emerge; transition material and non-material developmental technologies to fielded solutions as rapidly as possible.			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>- Provide expanded/enhanced CWMD information sharing and data analysis to meet increasing CCMD and interagency demand for support.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Conduct Research and Development to maintain DTRA's cutting edge 24/7 technical reach back assistance capability, decision support and planning support to 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 National Defense Strategy (NDS). - Apply 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. - 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. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 is due to the net impact of the realignment of resources from Projects JC - Enable Rapid Capability Delivery and JS - Assist Situational Understanding in PEs 0603134BR and 0604134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for technology-driven CWMD capability development and evaluation activities to develop organizationally cross cutting innovative and agile new technologies to more effectively counter the full spectrum of weapons of mass destruction, by anticipating new threats while responding to current and evolving threats, 2) the realignment of CENTCOM counter threat technologies from RG - Counter WMD Technologies and Capabilities Development to this project. These realignments are designed to provide more agile and integrated counter-threat support capability development support to CCMDs, for urgent for emergent theater needs, with a focus on advanced enrichment and conversion analysis, data storage & analysis, detector design, wide area search capability development, defeat pathways, and critical test site technical advancements, and 3) a downward adjustment due to economic assumptions for inflation.</p>			
Accomplishments/Planned Programs Subtotals	61.317	46.837	84.660

UNCLASSIFIED

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

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR: <i>Counter Weapons of Mass Destruction Applied Research</i>	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-
• 107/0604551BR: <i>Catapult</i>	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-
• 143/0605502BR: <i>Small Business Innovative Research</i>	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

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

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency										Date: May 2021		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>				Project (Number/Name) RD / <i>Nuclear Technologies and Capabilities Development</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RD: <i>Nuclear Technologies and Capabilities Development</i>	86.139	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

1. 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.
2. 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.
3. 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.
4. 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 2020	FY 2021	FY 2022
Title: RD: Nuclear Technologies and Capabilities Development	62.407	50.816	50.417

UNCLASSIFIED

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

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 2021 Plans:

- Develop improved contamination identification and avoidance capabilities into Service sensor networks and command and control systems
- Provide Long Dwell Spectrometer (LDS) with utility assessment for transition to Technical Support Group
- Develop and evaluate a modern replacement for the Alpha Beta detector more suited to support DoD's mission
- Evaluate the performance of prototype for use as a replacement for high-pressure Helium-3 tubes for neutron detection in support of the development of modern, novel detector solutions
- Provide prototype next generation cadmium zinc telluride (CZT) high-resolution (0.5%) detectors with 200% increase in size
- Provide prototype, novel neutron multiplicity detectors that are not Helium-3 based but meet or exceed the performance of Helium-3 based neutron detectors
- Provide automated/autonomous system that combines 3D Light Detection and Ranging (LIDAR) mapping with radiation hazard detection and identification of point and wide area hazards for operational utility assessment
- Provide improved aerial search/long dwell capabilities integrated into Mission Design Tool.
- Provide novel, low profile, low power photomultiplier that can offer a significant reduction in size, weight and power requirements for radiation detectors
- Conduct Technology Demonstrations of an integrated sensor network able to rapidly identify and map a radiological contaminated area using mobile, unmanned, manned and unattended sensors
- Conduct test and evaluation and utility assessments to inform acquisition decisions for selection of radiation imagers to support DoD missions.
- Develop and test prototype test articles for the integration of the Vehicle Integrated Platform Enhanced Radiac (VIPER) into Army Combat vehicles (Abrams Main Battle Tank).
- Develop and test the radiological components of and integrated Chemical, Biological, Radiological, Nuclear rapid reconnaissance capability for U.S. Air Force
- Further develop situational awareness and decision support tools with applications that include deployed integrated CBRN sensors, effects calculator, contamination avoidance/monitoring, and other RN related sensors/tools for the Warfighter.

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.

FY 2020	FY 2021	FY 2022

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> - 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. <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The decrease from FY 2021 to FY 2022 is due to the net impact of 1) the realignment of resources from nuclear detection activities in this project to nuclear survivability activities in Project RD - in PE 0602718BR, and 2) the realignment of modeling and simulation and information sciences and applications activities from Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR.</p>			
Accomplishments/Planned Programs Subtotals	62.407	50.816	50.417

UNCLASSIFIED

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR/RD: <i>Counter Weapons of Mass Destruction Applied Research</i>	81.198	92.492	101.229	-	101.229	-	-	-	-	-	-
• 131/0605000BR/RD: <i>Counter Weapons of Mass Destruction Systems Development</i>	9.870	15.650	14.063	-	14.063	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

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

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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RG: <i>Counter WMD Technologies and Capabilities Development</i>	197.930	201.756	259.006	259.762	-	259.762	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter WMD Technologies and Capabilities Development encompasses the following areas.

1. Defeat Technologies 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.
2. 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.
3. Counter-terrorism 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 terrorist WMD development and acquisition pathways, to include defeat of the devices themselves, while minimizing risks to U.S. forces; and (2) counterterrorism concepts and technologies to integrate and synchronize activities that prevent terrorists 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.
4. 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.

UNCLASSIFIED

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5. 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.

6. 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 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 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 2020	FY 2021	FY 2022
<p>Title: RG: Counter WMD Technologies and Capabilities Development</p> <p>Description: Project RG develops advanced technologies and weapon concepts and validates their applicability to CWMD.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Deliver a streamlined Underground Facility (UGF) characterization tool incorporating Automated Advanced Targeting Development (A2TD) automation. - Deliver Full Dimensional Defeat Enterprise (FDDE) planning visualization tool for mobile deployment - Achieve Initial Operational Capability of System of Systems Facility Defeat Methods for Combatant Command Course of Action development. - Deliver Advanced Solid Mechanics computational tools in support of Combatant Command requirements. - Begin development of second-generation HPC software tools for DPOE, leveraging capabilities of high performance computing to improve automated analytics to more accurately and quickly identify events, actors and threats. - Integrate new models into DPOE to assess adversarial groups' intent to conduct chemical or biological weapon attacks. - Develop and integrate advanced capabilities and refine an operational framework to enhance warfighter capabilities to search for, detect, and identify WMD threats prior to release. - Extend WMD-pedia capabilities to support CWMD Mission Planning incorporating semi-supervised and active machine learning. - Maintain cooperative CWMD project technical exchange with the United Kingdom (UK) in support of US/UK Project Agreement 	201.756	254.006	259.762

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> - Conduct material science development and applications development to provide advanced materials for use in chemical and biological agent defeat. - Develop, demonstrate, and transition a ground sensor with multiple modalities for signature detection, classification, and localization for strategic systems defeat. - Develop and transition four high explosive prototype fills to the Army. - Develop, integrate and demonstrate advanced CWMD sensing payloads for both unmanned and remote sensing missions. - Develop machine learning neural networks trained to optimize conventional weapon strikes against hardened and WMD facilities. - Develop new and enhanced capabilities for defensive vulnerability assessment and offensive WMD defeat modeling and simulation planning tools. - Investigate, develop, and integrate new technologies for enhancement and protection of autonomous capabilities to provide joint solutions in a multi-domain environment. - Develop CWMD weapon effects modeling algorithms and conduct scaled test series leveraging machine learning and optimization to investigate CWMD weapon effects for enhancing WMD defeat modeling and simulation planning tools and assessing new WMD defeat mechanisms . - Conduct full-scale prototype demonstration of novel access denial technology in an operational environment. - Complete Coalition Warfare Program Agreement with Republic of Korea for advancement of autonomous tunnel exploitation technologies. - Develop offensive counter-proliferation, counter-WMD technologies in support of Combatant Command requirements. - 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. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - 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 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. 			

UNCLASSIFIED

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>	Project (Number/Name) RG / <i>Counter WMD Technologies and Capabilities Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>- Conduct research and development of dual-use threat components for test and evaluation in support of COCOMs, network disruption capability, and RDT&E of current and emerging WMD threats to operational force.</p> <p>- 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).</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 is due to the net impact of 1) the realignment of resources from Projects JC - Enable Rapid Capability Delivery in PE 0603134BR this project to enable rapid capability delivery activities, 2) the realignment of CENTCOM counter threat technologies from this project to Project RA - CWMD Cross-Cutting Technical and Information Sciences as part of an organizational integration to focus more cost effectively on CWMD support to CCMDs and the military departments, and 3) the realignment of RDT&E resources to O&M for advisory services in support of cross-cutting research and development activities to operationalize forecasting methodologies, and O&M for operational activities of the Targeting and Weaponizing Analysis Cell and Hard Target Research and Analysis Center (HTRAC). In FY 2021, there was a congressional add for Strategic Systems Defeat in Project RG - Counter WMD Technologies and Capabilities Development.</p>			
Accomplishments/Planned Programs Subtotals	201.756	254.006	259.762

	FY 2020	FY 2021
Congressional Add: Strategic Systems Defeat	0.000	5.000
FY 2020 Accomplishments: N/A		
<p>FY 2021 Plans: - Design, develop, test, and deliver five (5) 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.</p> <p>- 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-to-Right-of-Launch (LTRI) wargame campaign.</p>		
Congressional Adds Subtotals	0.000	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>	Project (Number/Name) RG / <i>Counter WMD Technologies and Capabilities Development</i>

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR/RG: <i>Counter Weapons of Mass Destruction Applied Research</i>	20.958	22.958	29.359	-	29.359	-	-	-	-	-	-

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 2022 Defense Threat Reduction Agency **Date:** May 2021

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>	Project (Number/Name) RR / <i>CWMD Test and Evaluation</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RR: <i>CWMD Test and Evaluation</i>	0.000	0.160	0.000	4.523	-	4.523	-	-	-	-	-	-
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 counterproliferation pillar of the National Strategy to Counter WMD.

Project RR CWMD Test and Evaluation, was added to this Program Element in FY 2022. Project RR is not a new start effort. These funds were realigned within Budget Activity (BA) 3, from PE 0603134BR, Project JC - Enable Rapid Capability Delivery to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts, and to facilitate transition of CWMD development capabilities into the next stage of development.

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

	FY 2020	FY 2021	FY 2022
Title: RR: CWMD Test and Evaluation	0.160	0.000	4.523
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 2021 Plans: N/A			
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 unmanned systems operating at different levels of automation and autonomy and make available through DTRA's data architecture system to the broader USG community.			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / <i>Counter Weapons of Mass Destruction Advanced Technology Development</i>	Project (Number/Name) RR / <i>CWMD Test and Evaluation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
- Integrate algorithms developed in FY2021 to develop a multi-phenomenology-based tool deliverable to a CCMD as a means for future development of early detection and countermeasures for specific threats in their AOR.			
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The increase from FY 2021 to FY 2022 is due to the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts, and to facilitate transition of CWMD development capabilities into the next stage of development.			
Accomplishments/Planned Programs Subtotals	0.160	0.000	4.523

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 21/0602718BR: <i>Counter Weapons of Mass Destruction Applied Research</i>	16.086	18.156	18.311	-	18.311	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

N/A