Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Defense Threat Reduction Agency	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	31.368	7.219	13.100	15.650	0.000	15.650	14.803	13.959	13.118	13.381	Continuing	Continuing
MA: *Mission Assurance Risk Management System*	0.000	0.000	5.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
RD: *Nuclear Technologies and Capabilities Development*	0.000	0.000	7.500	15.650	0.000	15.650	14.803	13.959	13.118	13.381	Continuing	Continuing
RF: *Forensics Technologies*	31.368	6.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	37.384
RL: *Nuclear & Radiological Effects*	0.000	1.203	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.203

Note

In program element 0605000BR, DTRA consolidated project RF-Forensics Technologies into the renamed project RD-Nuclear Technologies and Capabilities Development beginning in FY 2020. On July 3, 2019, Office of the Secretary of Defense established program element 0605141BR for project MA-Mission Assurance Risk Management System. Beginning in FY 2021, funding for project MA-Mission Assurance Risk Management System will be requested in this newly established program element.

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. This funding supports International Monitoring System (IMS) technology requirements under the Nuclear Arms Control Technology (NACT) mission and development of nuclear weapon effects (NWE) M&S capabilities for decision support systems, including Enhanced Consequence Analysis (ECA).

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Defense Threat Reduction Agency	Date: February 2020
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*

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	6.163	13.100	13.150	-	13.150
Current President's Budget	7.219	13.100	15.650	-	15.650
Total Adjustments	1.056	0.000	2.500	-	2.500
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.203	-			
• SBIR/STTR Transfer	-0.147	-			
• Realignment	-	-	2.500	-	2.500

Change Summary Explanation

The increase in FY 2021 from the previous President's Budget is due to the net impact of:
(1) increased investment for verification and validation, testing, documentation, and enhanced support of M&S capabilities to enable integration of these capabilities in U.S. and allied nuclear planning and decision-making, and
(2) realignment of funding to the newly established program element 0605141BR for the Mission Assurance and Risk Management System as a program of record.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) MA / *Mission Assurance Risk Management System*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
MA: *Mission Assurance Risk Management System*	0.000	0.000	5.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In an October 29, 2018 memorandum, the Deputy Secretary of Defense directed the transfer of Mission Assurance Risk Management System (MARMS) program management responsibilities from the Department of Defense Chief Information Officer (DoD CIO) to the Defense Threat Reduction Agency (DTRA), in light of DTRA's role in conducting Joint Mission Assurance Assessments. Prior to FY 2020, funding for MARMS is captured in program element 0605170D8Z; beginning in FY 2021 funding for MARMS is captured in a newly established program element, 0605141BR.

A. Mission Description and Budget Item Justification

The Mission Assurance Risk Management System (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 each of the three security objectives (confidentiality, integrity, and availability) 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: MA - Mission Assurance Risk Management System	0.000	5.600	0.000	0.000	0.000
Description: MARMS Requirements Definition Package (RDP)-1 defines multiple spirals of major technological improvements. Each spiral is comprised of multiple Capability Drops (CD) that defined specific capabilities. RDP-1 defines seven (7) capability drops focusing on the collection, analysis, warehousing, sharing, protection, and accessing of Defense Critical Infrastructure (DCI) and AntiTerrorism (AT) data supporting multiple types and levels of trusted users. ***FY 2020 Plans:*** - Continue system engineering and agile development per MARMS RDP-1. - Continue to improve capability of the Information Sharing Data Registry (CD1) and Mission Assurance Assessments (CD2). - Continue development of the Mission Assurance Viewer and Analysis Portal on SIPR (CD6) toward initial					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
capability fielding in 4th Quarter FY 2022. - Continue the development effort of the Mission Assurance Workspace and Viewer on JWICS (CD5) toward initial capability fielding in 4th Quarter FY 2020. - Initiate the development effort of the Cross Domain Solutions (CDS) – Low to High (CD6). - Complete the MA Workspace and Viewer, which will provide the department's leadership with a consolidated MA dashboard and analytical capabilities to perform planning and analysis of MA activities per DODD 3020.40 and DODI 3020.45. ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The decrease from FY 2020 to FY 2021 is due to the realignment of existing funding to the newly established program element 0605141BR for the Mission Assurance and Risk Management System as a program of record.					
Accomplishments/Planned Programs Subtotals	0.000	5.600	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• 137/0605141BR: *Mission Assurance Risk Management System*	0.000	0.000	5.500	0.000	5.500	5.500	5.500	5.500	5.610	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*	

Product Development ($ in Millions)

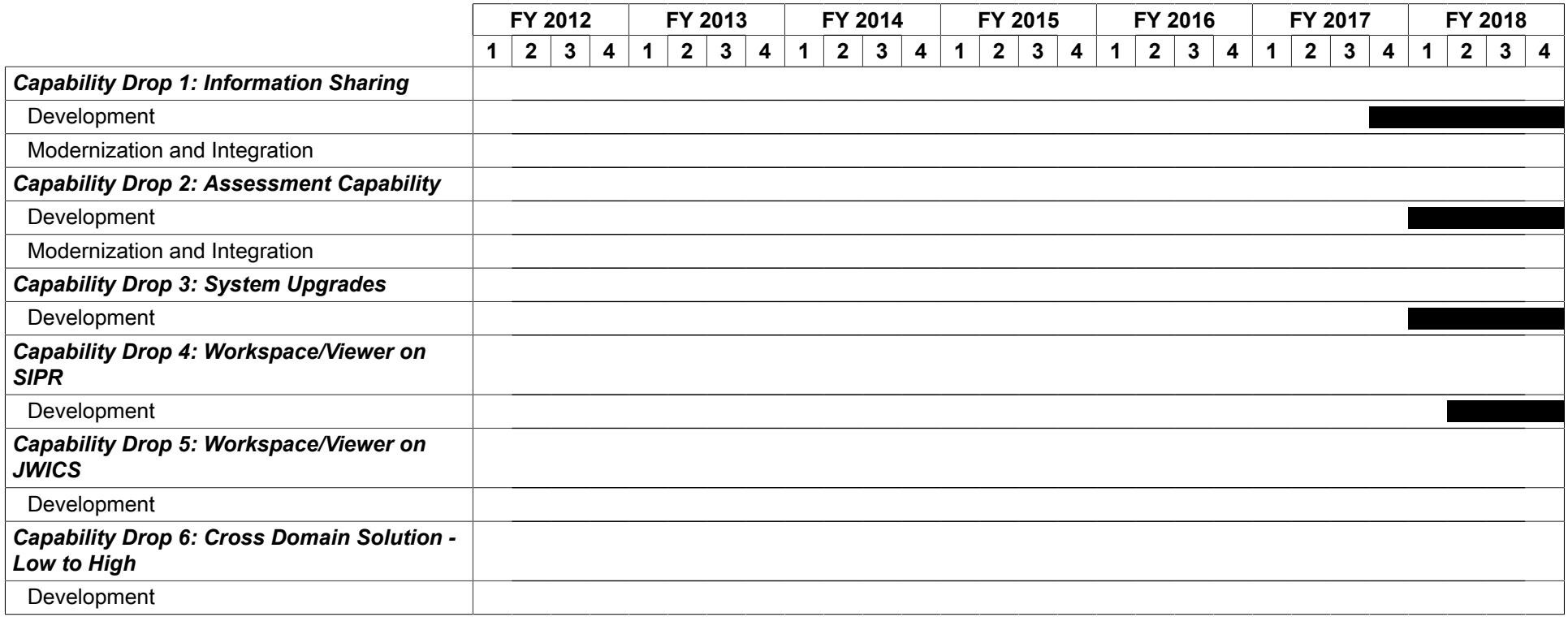
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CD1 - Information Sharing and Lead Integration	MIPR	U.S. Army Futures Command : Picatinny Arsenal, NJ	-	-		2.767	Feb 2020	-		-		-	Continuing	Continuing	-
CD2 - Assessment Capability	C/CPFF	Alion Science & Technology : McLean, VA	-	-		0.690	Feb 2020	-		-		-	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	Naval Surface Warfare Center : Dahlgren, VA	-	-		0.700	Feb 2020	-		-		-	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	U.S Strategic Command (STRATCOM) : Offutt, NE	-	-		0.400	Feb 2020	-		-		-	Continuing	Continuing	-
CD4 - Workspace/Viewer on Secret Internet Protocol Router Network (SIPR) and CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	TBD : TBD	-	-		0.560	Feb 2020	-		-		-	Continuing	Continuing	-
CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	Institute for Defense Analysis : Washington, DC	-	-		0.390	Feb 2020	-		-		-	Continuing	Continuing	-
MARMS Hosting	MIPR	Acquisition, Logistics, and Technology Enterprise Systems and Services (ALTESS) : Radford, VA	-	-		0.093	Jan 2020	-		-		-	Continuing	Continuing	-
		Subtotal	-	-		5.600		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) MA / *Mission Assurance Risk Management System*	

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		5.600		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*



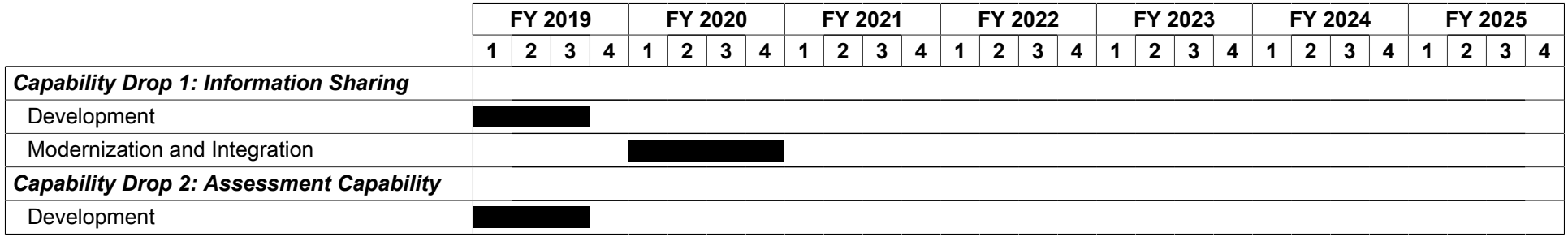


Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

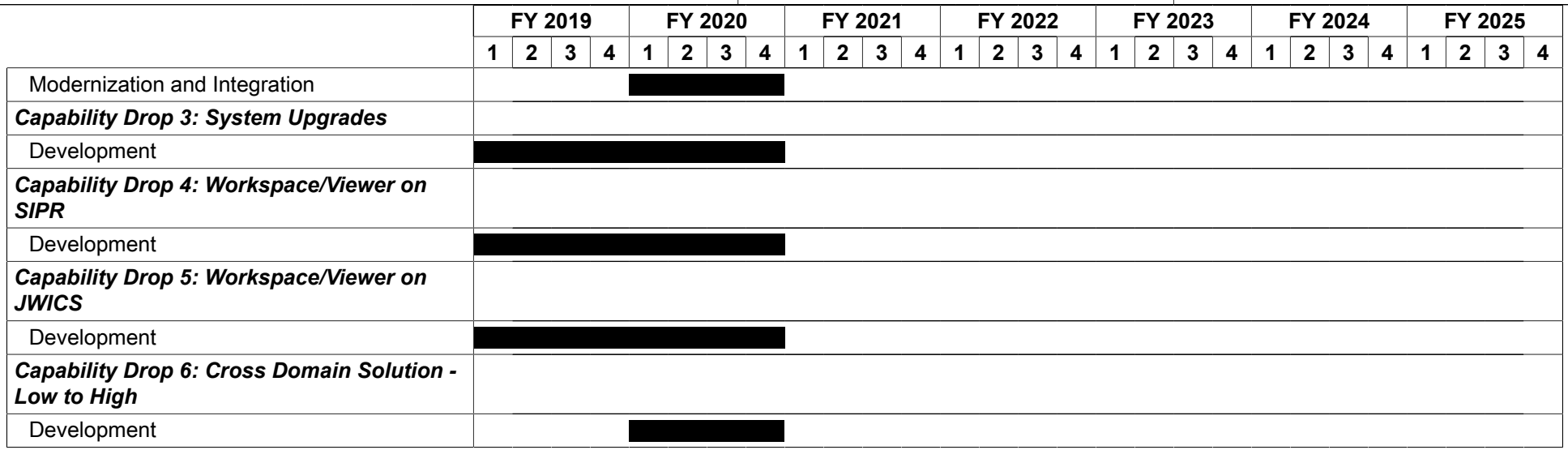


Exhibit R-4A, RDT&E Schedule Details: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Capability Drop 1: Information Sharing				
Development	4	2017	3	2019
Modernization and Integration	1	2020	4	2020
Capability Drop 2: Assessment Capability				
Development	1	2018	3	2019
Modernization and Integration	1	2020	4	2020
Capability Drop 3: System Upgrades				
Development	1	2018	4	2020
Capability Drop 4: Workspace/Viewer on SIPR				
Development	2	2018	4	2020
Capability Drop 5: Workspace/Viewer on JWICS				
Development	1	2019	4	2020
Capability Drop 6: Cross Domain Solution - Low to High				
Development	1	2020	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency			Date: February 2020
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*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
RD: *Nuclear Technologies and Capabilities Development*	0.000	0.000	7.500	15.650	0.000	15.650	14.803	13.959	13.118	13.381	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2020, DTRA consolidated projects RF-Forensics Technologies, RI-Nuclear Survivability, and RL-Nuclear and Radiological Effects in program element 0602718BR, into the renamed project RD-Nuclear Technologies and Capabilities Development.

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 Nuclear Arms Control Technologies (NACT) program performs Research, Development, Test, and Evaluation (RDT&E) 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. 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 project addresses WMD monitoring, implementation of, and compliance with arms control agreement requirements validated by the Office of the Under Secretary of Defense, Acquisition and Sustainment. This project conforms to the administration's research and development priorities related to countering WMD. Technical assessments are made against nuclear treaty implementation and nuclear event response requirements to provide the basis for sound project development, evaluate existing programs, provide U.S. IMS data, and to access international IMS data required to support U.S. monitoring policy, decision- makers, and negotiation teams. This project will improve the efficiency, performance, reliability, and sustainability of U.S. IMS stations; optimize IMS capabilities to support both nuclear treaty monitoring and nuclear-event response; and improve capabilities to detect, characterize, and enable discrimination of nuclear events.

The Nuclear Capabilities Services (NuCS) project performs RDT&E to improve capabilities to model nuclear weapon effects (NWE) environments and simulate the response of systems and networks to these effects. The Enhanced Consequence Analysis (ECA) project integrates NuCS capabilities and integrates these modeling and simulation (M&S) capabilities with operational databases and systems. Together, these programs support U.S. and allied planning and decision making in the event of nuclear weapon use.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency		Date: February 2020
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: RD - Nuclear Technologies and Capabilities Development	0.000	7.500	15.650	0.000	15.650
Description: Project RD supports the NACT Program, conducting RDT&E to meet IMS technology requirements in support of treaty verification, monitoring and other emerging nuclear arms control activities, and the NuCS and ECA projects conducting RDT&E to support U.S. and allied nuclear planning and decision making requirements. ***FY 2020 Plans:*** - Continue to provide data from IMS infrastructure in support of DoD and Interagency nuclear-event response missions to enhance nuclear event response and consequence management mission capabilities. - Integrate IMS into appropriate DoD and interagency exercises to ensure stakeholder involvement in system optimization and to leverage, to the fullest extent possible, all IMS data streams in informing partner exercise activities. - Analyze technical requirements for new and upgraded capabilities within the IMS infrastructure that will support nuclear event response. - Leverage conventional high explosive test events to evaluate U.S. IMS performance. - Participate in CTBT Organization international- and interagency-sponsored technology development exchanges to ensure IMS research and engineering activities remain current and relevant. ***FY 2021 Base Plans:*** - Leverage and conduct conventional high explosive test events to evaluate U.S. IMS performance and validate geophysical models. - Continue to integrate data from IMS infrastructure and upgrade IMS technologies in support of DoD and Interagency nuclear-event response missions and treaty compliance. - Integrate IMS into appropriate DoD and interagency exercises to ensure stakeholder involvement in system optimization and to leverage, to the fullest extent possible, all IMS data streams in informing partner exercise activities. - Develop new and upgraded treaty-monitoring capabilities that will support nuclear-event response and strategic DoD missions. - Participate in international and interagency-sponsored technology development exchanges to ensure IMS research and engineering activities remain current and relevant. - Establish baseline of integrated nuclear weapon effects modeling and simulation capabilities that have completed V&V (document verification and validation activities and develop training materials for operators and subject-matter experts who develop and use planning and decision-making systems).					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency		Date: February 2020
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*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
- Deliver initial solution for calculating nuclear weapon effects to be integrated into existing planning and decision-support systems at U.S. and allied commands. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The increase from FY 2020 to FY 2021 is due to the new requirement for DTRA to provide an Enhanced Consequence Analysis (ECA) capability to improve nuclear effects and response models for the strategic nuclear planning community. Requested by Combatant Commands, specifically U.S. Strategic Command (STRATCOM), this capability will integrate nuclear planning models into conventional Joint Force operational planning models. This new requirement is driven by the 2018 National Defense Strategy and the Nuclear Posture Review (NPR) updates.					
Accomplishments/Planned Programs Subtotals	0.000	7.500	15.650	0.000	15.650

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• 21/0602718BR/RD: *Counter Weapons of Mass Destruction Applied Research*	21.050	89.860	92.492	-	92.492	91.351	93.732	95.307	97.214	Continuing	Continuing
• 29/0603160BR/RD: *Counter Weapons of Mass Destruction Advanced Technology Development*	21.193	70.153	51.416	-	51.416	51.480	53.081	55.547	56.659	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 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	Jan 2020	1.212	Jan 2021	-		1.212	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	FFRDC	Sandia National Laboratory : Albuquerque, NM	-	-		1.850	Jan 2020	1.350	Jan 2021	-		1.350	Continuing	Continuing	-
Radionuclide sensor, station, and network Improvements	MIPR	Air Force Technical Application Center : Patrick AFB, FL	-	-		0.500	Dec 2019	0.390	Feb 2021	-		0.390	Continuing	Continuing	-
Radionuclide sensor, station, laboratory and network improvements	C/CPFF	General Dynamics Mission Systems, Inc. : Fairfax, VA	-	-		0.435	Nov 2019	0.446	Nov 2020	-		0.446	Continuing	Continuing	-
Station, and network Improvements	C/CPFF	Leidos Innovations Corp : Alexandria, VA	-	-		0.200	Apr 2020	0.240	Nov 2020	-		0.240	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	Pennsylvania State University : State College, PA	-	-		0.400	Feb 2020	0.450	Jan 2021	-		0.450	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	University of Alaska Fairbanks : Fairbanks, AK	-	-		0.143	Mar 2020	0.000		-		0.000	Continuing	Continuing	-
IMEA Software Development	C/CPFF	Applied Research Associates, Inc : Alexandria, VA	-	-		0.200	Jan 2020	0.200	Feb 2021	-		0.200	Continuing	Continuing	-
IMS Gas Background Analysis	FFRDC	Argonne National Laboratory : Argonne, IL	-	-		0.200	Dec 2019	0.000		-		0.000	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	C/TBD	TBD : TBD	-	-		0.160	Mar 2020	0.500	Mar 2021	-		0.500	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Seismic and Infrasound sensor, station, and network Improvements	MIPR	US Army Corps of Engineers : Vicksburg, MS	-	-		0.100	Dec 2019	0.300	Jan 2021	-		0.300	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	Missile Defense Agency : Fort Belvoir, VA	-	-		0.650	Mar 2020	0.000		-		0.000	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/TBD	University of Alaska : Fairbanks, AK	-	-		0.500	Feb 2020	0.500	Feb 2021	-		0.500	Continuing	Continuing	-
Radionuclide sensor, station, and network Improvements	FFRDC	Savanah River National Laboratory : Savannah River Site Aiken, SC	-	-		0.500	Apr 2020	0.750	Mar 2021	-		0.750	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	DIA/MSIC : TBD	-	-		-		0.250	Mar 2021	-		0.250	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	FFRDC	Lawrence Livermore National Laboratory : Livermore, CA	-	-		-		0.950	Jan 2021	-		0.950	Continuing	Continuing	-
Nuclear weapon effects models and integrated NuCS core architecture development	C/CPFF	Applied Research Associates : Raleigh, NC	-	-		-		3.000	Jul 2021	-		3.000	Continuing	Continuing	-
Enhanced consequence analysis initial capability	C/CPFF	TBD : TBD	-	-		-		5.000	Jul 2021	-		5.000	Continuing	Continuing	-
		Subtotal	-	-		7.388		15.538		-		15.538	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency		Date: February 2020
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*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Reqn	Various : Various	-	-		0.112	Nov 2019	0.112	Nov 2020	-		0.112	Continuing	Continuing	-
		Subtotal	-	-		0.112		0.112		-		0.112	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		7.500		15.650		-		15.650	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency		Date: February 2020
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*

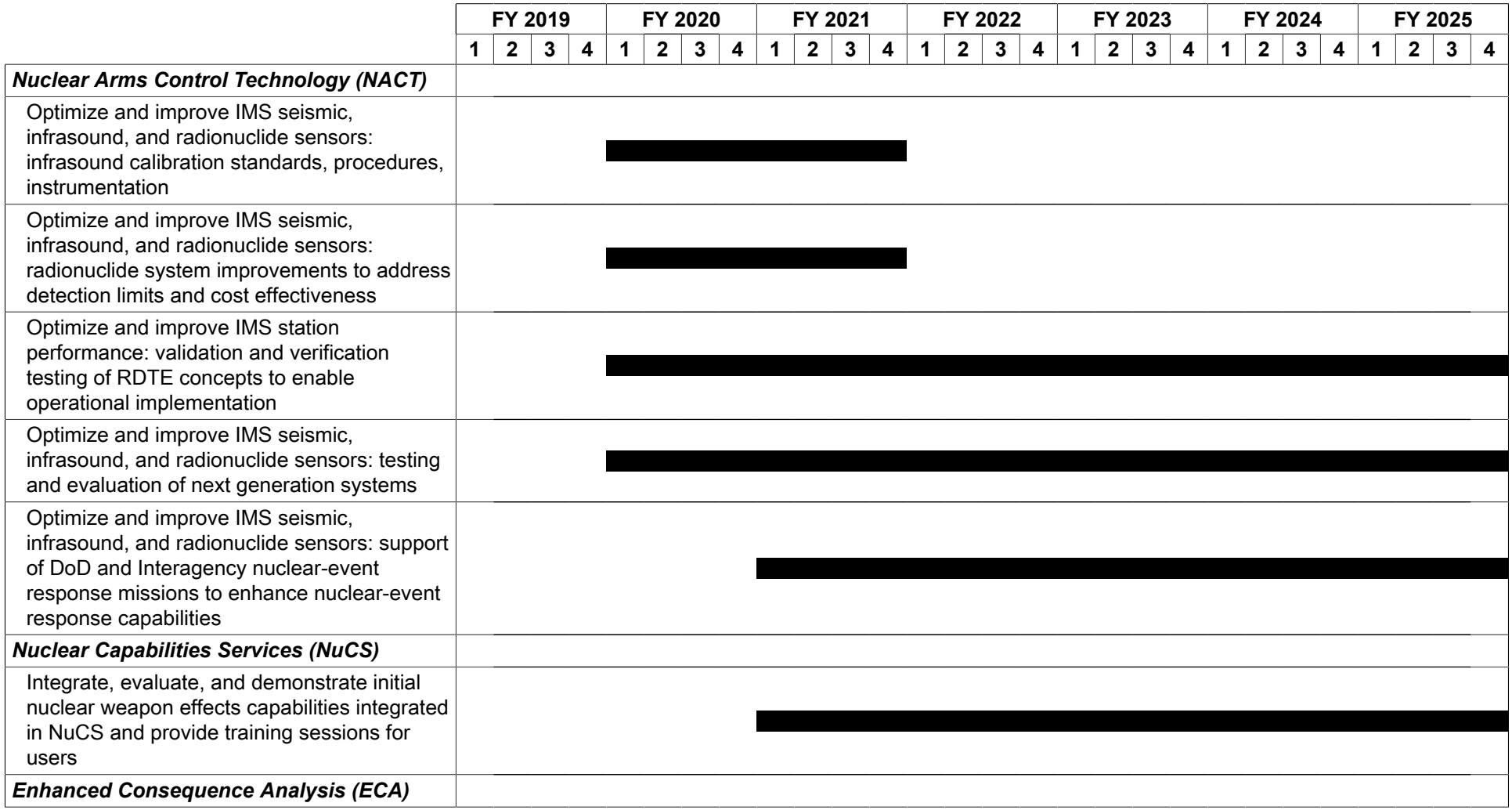


Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*	

	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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, integrate, and train users on initial ECA nuclear planning and decision support system																												

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Defense Threat Reduction Agency		Date: February 2020
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*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Nuclear Arms Control Technology (NACT)				
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: infrasound calibration standards, procedures, instrumentation	1	2020	4	2021
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: radionuclide system improvements to address detection limits and cost effectiveness	1	2020	4	2021
Optimize and improve IMS station performance: validation and verification testing of RDTE concepts to enable operational implementation	1	2020	4	2025
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: testing and evaluation of next generation systems	1	2020	4	2025
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: support of DoD and Interagency nuclear-event response missions to enhance nuclear-event response capabilities	1	2021	4	2025
Nuclear Capabilities Services (NuCS)				
Integrate, evaluate, and demonstrate initial nuclear weapon effects capabilities integrated in NuCS and provide training sessions for users	1	2021	4	2025
Enhanced Consequence Analysis (ECA)				
Demonstrate, integrate, and train users on initial ECA nuclear planning and decision support system	1	2021	3	2025

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RF / *Forensics Technologies*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
RF: *Forensics Technologies*	31.368	6.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	37.384
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2020, efforts in this project are captured under project RD-Nuclear Technologies and Capabilities Development.

A. Mission Description and Budget Item Justification

This project supports the development of verification and monitoring capabilities for the Defense Threat Reduction Agency (DTRA) to counter proliferation and weapons of mass destruction (WMD). DTRA's Nuclear Arms Control Technologies (NACT) program performs Research, Development, Test, and Evaluation (RDT&E) 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 comprising the U.S. portion of the International Monitoring System (IMS). This delivers data to the U.S. monitoring and verification community and enables U.S. compliance with the Comprehensive Nuclear Test Ban Treaty (CTBT) in support of U.S. and Department of Defense (DoD) nonproliferation objectives.

The project addresses WMD monitoring, implementation of, and compliance with arms control agreement requirements validated by the Office of the Under Secretary of Defense, Acquisition and Sustainment. This project conforms to the administration's research and development priorities related to WMD arms control and disablement. Technical assessments are made against CTBT implementation requirements and U.S. objectives to provide the basis for sound project development, evaluate existing programs, provide data required to inform compliance assessments, and support U.S. monitoring policy, decision-makers, and negotiation teams.

The primary RDT&E program emphasis is on improvements that enable the installation of treaty-specific stations, which reduce costs and increase the reliability in diverse and often harsh environments; improve efficiency, performance, reliability, and sustainability of existing stations and treaty-specified verification capabilities; and improve capabilities to detect, characterize, and enable discrimination of, nuclear weapons tests. 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: RF - Forensics Technologies	6.016	0.000	0.000	0.000	0.000
Description: Project RF supports the NACT Program, conducting RDT&E to meet IMS technology requirements in support of CTBT implementation, compliance, monitoring, inspection, and other emerging nuclear arms control activities.					
FY 2020 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RF / *Forensics Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
N/A ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** N/A					
Accomplishments/Planned Programs Subtotals	6.016	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• 21/0602718BR/RF: *Counter Weapons of Mass Destruction Applied Research*	7.716	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.716
• 29/0603160BR/RF: *Counter Weapons of Mass Destruction Advanced Technology Development*	30.947	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.947

Remarks

D. Acquisition Strategy

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RF / *Forensics Technologies*	

Support ($ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
Radionuclide sensor, station, laboratory and network improvements	FFRDC	Pacific Northwest National Laboratory : Richland, WA	7.533	1.403	Jan 2019	-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	FFRDC	Sandia National Laboratory : Albuquerque, NM	7.421	1.850	Jan 2019	-		-		-		-	Continuing	Continuing	-
Radionuclide sensor, station, and network improvements	MIPR	Air Force Technical Application Center : Patrick AFB, FL	3.354	0.250	Nov 2018	-		-		-		-	Continuing	Continuing	-
Engineering & Technical Services	C/CPFF	Engility Corp : Chantilly, VA	1.986	-		-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	Dynetics, Inc : Arlington, VA	1.828	-		-		-		-		-	Continuing	Continuing	-
Radionuclide sensor, station, laboratory and network improvements	C/CPFF	General Dynamics Mission Systems, Inc. : Fairfax, VA	2.489	0.431	Nov 2018	-		-		-		-	Continuing	Continuing	-
Station, and network Improvements	C/CPFF	Leidos Innovations Corp. : Alexandria, VA	0.716	0.200	Apr 2019	-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	Pennsylvania State University : State College, PA	0.982	0.200	Jan 2019	-		-		-		-	Continuing	Continuing	-
Station failure and logistics modeling and simulation	C/CPFF	Systems Exchange, Inc. : Carmel, CA	0.313	-		-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	Naval Research Laboratory : Washington DC	0.204	0.200	Jan 2019	-		-		-		-	Continuing	Continuing	-
EIF Readiness Planning	C/CPFF	Alion Science and Technology Corp. : McLean, VA	0.300	0.100	Jan 2019	-		-		-		-	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RF / *Forensics Technologies*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Radionuclide sensor, station, laboratory and network improvements	C/CPFF	Raytheon Company : Dulles, VA	0.200	-		-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	University of Alaska Fairbanks : Fairbanks, AK	0.459	0.129	Mar 2019	-		-		-		-	Continuing	Continuing	-
IMEA Software Development	C/CPFF	Applied Research Associates, Inc. : Alexandria, VA	0.200	0.200	Dec 2018	-		-		-		-	Continuing	Continuing	-
IMS Gas Background Analysis	FFRDC	Argonne National Laboratory : Argonne, IL	0.130	0.100	Apr 2019	-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	C/TBD	TBD : TBD	-	0.295	May 2019	-		-		-		-	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	US Army Corps of Engineers : Vicksburg, MS	0.171	0.100	Dec 2018	-		-		-		-	Continuing	Continuing	-
		Subtotal	28.286	5.458		-		-		-		-	Continuing	Continuing	N/A

Management Services ($ in Millions)

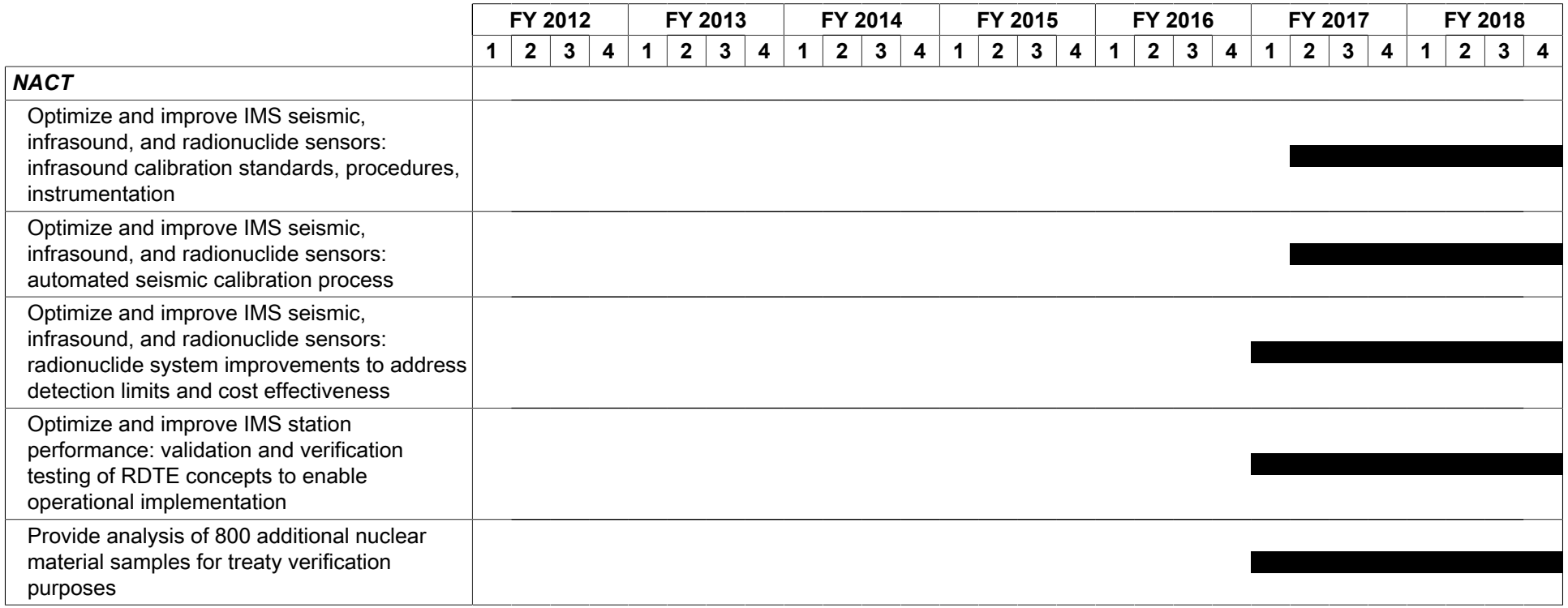
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A&AS Support to Program Office	C/CPFF	Engility Corp. : Chantilly, VA	1.472	0.446	Dec 2018	-		-		-		-	Continuing	Continuing	-
A&AS Support to Program Office	MIPR	OUSD A&S : Arlington, VA	0.948	-		-		-		-		-	Continuing	Continuing	-
Travel	TBD	Various : Various	0.662	0.112	Nov 2018	-		-		-		-	Continuing	Continuing	-
		Subtotal	3.082	0.558		-		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RF / *Forensics Technologies*	

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	31.368	6.016		0.000		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RF / *Forensics Technologies*



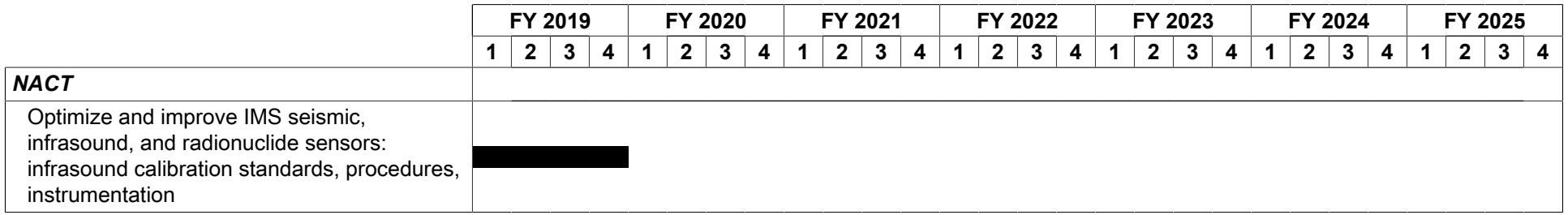


Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RF / *Forensics Technologies*

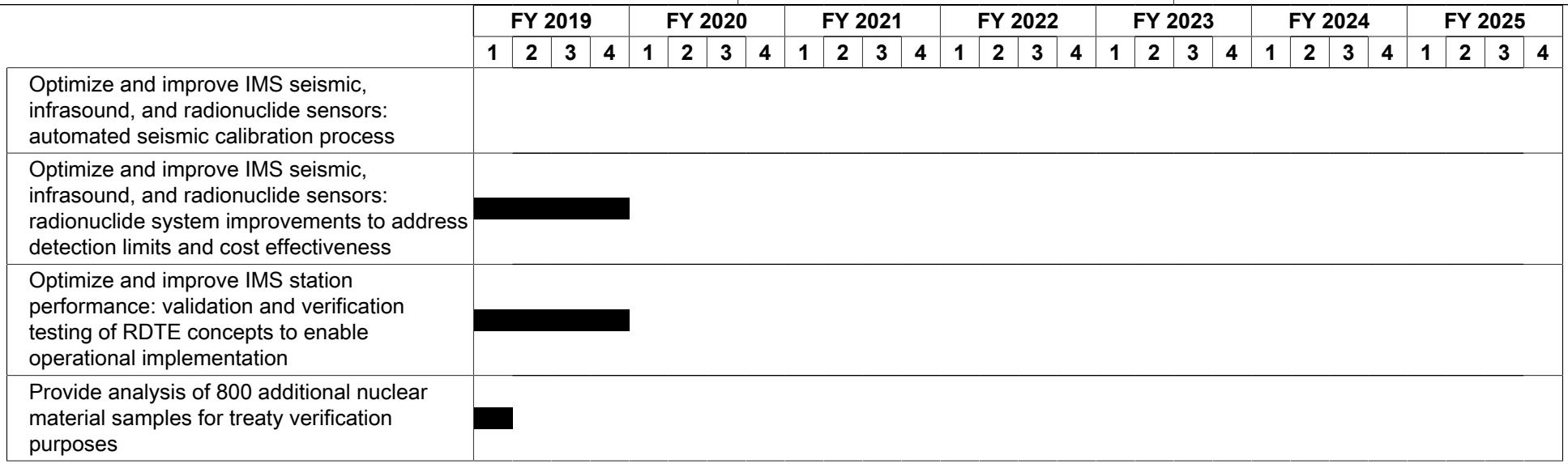


Exhibit R-4A, RDT&E Schedule Details: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RF / *Forensics Technologies*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
NACT				
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: infrasound calibration standards, procedures, instrumentation	2	2017	4	2019
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: automated seismic calibration process	2	2017	4	2018
Optimize and improve IMS seismic, infrasound, and radionuclide sensors: radionuclide system improvements to address detection limits and cost effectiveness	1	2017	4	2019
Optimize and improve IMS station performance: validation and verification testing of RDTE concepts to enable operational implementation	1	2017	4	2019
Provide analysis of 800 additional nuclear material samples for treaty verification purposes	1	2017	1	2019

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RL / *Nuclear & Radiological Effects*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
RL: *Nuclear & Radiological Effects*	0.000	1.203	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.203
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2020, efforts in this project are captured under project RD-Nuclear Technologies and Capabilities Development.

A. Mission Description and Budget Item Justification

The Nuclear and Radiological Effects project develops, integrates, and transitions nuclear and radiological assessment modeling tools for use in military planning processes. The assessment modeling tools provide critical analytics for Consequence of Execution (COE) considerations during nuclear targeting and post-detonation nuclear response, supporting interagency strategic and tactical decision making. These COE considerations can include the full range of political, military, economic, social, infrastructure, and information (PMESII) factors and their interaction, extending analytical capabilities beyond common damage assessment practices and into second and third order effects. These activities/efforts support Combatant Commands and other Department of Defense (DoD) organizations by providing accurate and reliable consequence assessment and response information.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: RL: Nuclear and Radiological Effects ***Description:*** Project RL develops nuclear and radiological assessment modeling tools to support military operational planning, weapons effects predictions, and strategic system design decisions.	1.203	-	-	-	-
Accomplishments/Planned Programs Subtotals	1.203	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• 21/0602718BR: *Nuclear & Radiological Effects*	27.643	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	27.643
• 29/0603160BR: *Nuclear & Radiological Effects*	2.947	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.947

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RL / *Nuclear & Radiological Effects*

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RL / *Nuclear & Radiological Effects*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Enhanced Consequence Analysis (ECA) Nuclear Planning and Decision Support System	C/CPFF	Booz Allen Hamilton : McLean, VA	-	1.203	Jun 2019	-		-		-		-	0.000	1.203	1.203
		Subtotal	-	1.203		-		-		-		-	0.000	1.203	N/A

Remarks

Beginning in FY 2020, efforts in this project are captured under project RD-Nuclear Technologies and Capabilities Development.

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.203		0.000		-		-		-	0.000	1.203	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Threat Reduction Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RL / *Nuclear & Radiological Effects*	

	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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)																												
Demonstrate, integrate, and train users on initial ECA nuclear planning and decision support system			[redacted]																									

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Defense Threat Reduction Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RL / *Nuclear & Radiological Effects*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Enhanced Consequence Analysis (ECA)				
Demonstrate, integrate, and train users on initial ECA nuclear planning and decision support system	3	2019	4	2019

Note

Beginning in FY 2020, efforts in this project are captured under project RD-Nuclear Technologies and Capabilities Development.