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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603161D8Z I <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</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	296.585	41.768	32.616	28.687	-	28.687	-	-	-	-	-	-
162: <i>Nuclear and Conventional Physical Security</i>	254.543	34.502	24.654	21.317	-	21.317	-	-	-	-	-	-
040: <i>National Technical Nuclear Forensics Systems</i>	42.042	0.128	1.725	7.370	-	7.370	-	-	-	-	-	-
041: <i>CNT Prevention ADC&P</i>	-	7.138	6.237	0.000	-	0.000	-	-	-	-	-	-

Note

Funding transferred from Countering Nuclear Threats (CNT) to National Technical Nuclear Forensics (NTNF), P040. In fiscal year (FY) 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas. This resulted in degradation of the Department of Defense (DoD) (and by default, the U.S. Government's (USG)) already limited ability to effectively and reliably execute the nuclear forensics mission. As the lead for providing the USG's post-detonation nuclear forensics capability, DoD is emphasizing the importance of this mission in deterring adversaries and ensuring success of the USG's post-detonation NTNF mission.

A. Mission Description and Budget Item Justification

Nuclear and Conventional Physical Security/National Technical Nuclear Forensics addresses the need to defend and deter against weapons of mass destruction threats and to safeguard personnel; prevent unauthorized access to equipment, installations, material, and documents; and to safeguard the foregoing against espionage, sabotage, damage, and theft. This program oversees advanced engineering development and rapid fielding throughout the DoD for an integrated and systemic approach for NTNF and the development of nuclear and conventional physical security material solutions. Public Law, Presidential and DoD-level guidance, and Combatant Command and Service requirements drive the priorities for these programs.

Under this PE, funding associated with nuclear and conventional physical security materiel solutions for the Department are broken down into seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The material solutions either (a) lead to a Program of Record transitioning to Program Element 0604161D8Z for Systems Development and Demonstration; (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product. The Physical Security Enterprise and Analysis Group is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability.

Per Presidential Policy Directive 42, Annex C, the DoD provides the USG post-detonation NTNF capability. Per DoD Directive 2060.04, the Office of the Undersecretary of Defense for Acquisition & Sustainment (OUSDA&S) is the office responsible for developing and leading DoD's NTNF capabilities. Ensuring the USG can identify the source of nuclear material and hold those responsible for an attack accountable is critical to our national defense and security. Internal and independent assessments indicate new capabilities are needed to sustain an effective deterrent against nuclear attack and meet the challenges of future threats. This PE is the only DoD Research, Development, Test, and Evaluation (RDT&E) program focused on Advanced Component Development & Prototypes for post-detonation NTNF capabilities and without proper funding, DoD's ability to meet this critical deterrence need will be significantly degraded.

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This PE can fund travel to support the requirements of this program.

This appropriation will finance work, including staffing, performed by a government agency or by private individuals or organizations under a contractual or grant arrangement with the government who conduct research, development, and test and evaluation efforts.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	42.695	32.636	32.130	-	32.130
Current President's Budget	41.768	32.616	28.687	-	28.687
Total Adjustments	-0.927	-0.020	-3.443	-	-3.443
• Congressional General Reductions	-	-0.020			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.927	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-3.443	-	-3.443

Change Summary Explanation

The adjustment made from FY 2021 to FY 2022 is to internally realign funds within the department for National Defense Strategy priorities and other program adjustments.

The FY 2022 funding request was reduced by \$7.449 million to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 162 / Nuclear and Conventional Physical Security
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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
162: Nuclear and Conventional Physical Security	254.543	34.502	24.654	21.317	-	21.317	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Physical Security Enterprise & Analysis Program (PSEAP) conducts Technology and Engineering and Manufacturing Development throughout the Department of Defense for an integrated and systemic approach for nuclear and conventional physical security technology and systems. Priorities are driven by Combatant Command and Service requirements. This program is also addressing the Unmanned Systems threat by developing technology solutions that address the entire Kill Chain (Detect, Track, Identify, and Defeat) that are interoperable.

Funding associated with nuclear and convention physical security materiel solutions for the Department are broken down into seven capability areas: (1) Detection and Assessment; (2) Access Controls; (3) Installation and Transport Security; (4) Storage and Safeguards; (5) Prevention; (6) Decision Support Systems; and (7) Analytical Support. The material solutions either (a) lead to a Programs of Record transitioning to Program Element 0604161D8Z for Systems Development and Demonstration; (b) become technology insertions into existing programs; or (c) advance to being a certified Commercial/Government off-the-shelf product. The Physical Security Enterprise and Analysis Group (PSEAG) is responsible for avoiding duplication of effort, ensuring systems integration, and promoting interoperability and sustainability.

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

	FY 2020	FY 2021	FY 2022
Title: Detection and Assessment	19.171	13.092	12.754
Description: The ability to detect an adversary and assess their intentions is a basic physical security tenant. This capability area will design equipment to identify and warn of unauthorized access to a specified area or installation as well as equipment related to the notification and identification of explosive threats or hazards.			
Accomplishment: The PSEAP and the National Nuclear Security Administration (NNSA) are jointly developing a Portable Intrusion Detection System (PIDS) that addresses similar needs to protect nuclear weapons and special nuclear material. PIDS will provide a stable sensor platform that maintains the integrity of an existing secure perimeter in the event of sensor maintenance or system downtime. These include, but are not limited to, scheduled maintenance and upgrade activities for extended periods of time, or during emergency situations requiring the establishment of a National Defense Area, and mission requirements that dictate deployment of nuclear certified assets to locations that do not meet nuclear security requirements.			
FY 2021 Plans:			
• Complete integration of the PIDS suitable for nuclear and non-nuclear security requirements for the U.S. Air Force and NNSA.			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> Develop a system that produces high-quality underwater images enabling human assessment of underwater threats at ranges up to 70 feet. Develop an algorithm to automatically classify alarms to quickly present valid alarms, reduce the occurrences of invalid alarms, and test in an operationally relevant waterside security environment. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> Complete the development of a system that produces high-quality underwater images enabling human assessment of underwater threats at ranges up to 70 feet. Complete the development of an algorithm to automatically classify alarms to quickly present valid alarms, reduce the occurrences of invalid alarms, and test in an operationally relevant waterside security environment. Assess and demonstrate the application of small Unmanned Aerial System's use in performing Physical Security Assessment of intrusions in remote areas such as perimeters and enclaves that are protected by an Intrusion Detection System (IDS), but are not equipped with co-located physical security assessment (i.e. EO/IR) equipment. Improve the AN/WQX-2 harbor security sonar's ability to detect Unmanned Underwater Vehicles by exploiting developments in the AN/WQX-2 sonar hardware refresh project. Combine the unique capabilities Wide Area Surveillance & Detection System and pursue the integration of RADAR technology to provide operational capability in adverse weather conditions. Develop Deep Learning Real Time Adaptive Learning Monitoring of Sound Velocity Profile to optimize a harbor security system's detection range capabilities. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>			
<p>Title: Access Controls</p> <p>Description: Controlling access to safeguard personnel and their families and to prevent unauthorized access to critical infrastructure and materials is paramount. This capability area will focus on programs and processes related to the validity and verification of individuals entering or already within a facility.</p> <p>Accomplishment: Defense Installation Access Control project enhances the Identity Matching Engine for Security & Analysis (IMESA) used at hundreds of DoD entry control points to compare Personal Identity Verification/Common Access Card holders against the National Crime Information Center and the Interstate Identification Index. Previous work developed a capability that compares DoD registered cardholders against the FBI's Wanted Persons File and against the Terrorist Screening Database. This</p>	6.321	4.954	2.745

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>capability prevents un-cleared people or potential terrorists from entering DoD installations. The upgraded system identified an individual with warrants for murder and aggravated assault with a deadly weapon attempting to gain installation access.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> Evaluate application of radio-frequency identification technology to rapidly detect Biological Select Agents and Toxins (BSAT) in packages exiting Army BSAT laboratories' entry control points and shipping areas without opening the containers. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> Develop an effective and affordable Automated Installation Entry pre-enrolled express lane capability that can increase vehicle throughput and reduce security personnel without reducing access control point security. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>			
<p>Title: Installation and Transport Security</p> <p>Description: Robust installation and transport security are vital to preventing a weapon of mass destruction attack or the unauthorized access to key assets such as nuclear weapons and special nuclear material. This capability area will focus on programs and equipment intended to improve the physical security profile of fixed sites and facilities, as well as critical items while in-transit.</p> <p>Accomplishment: Joint Active Shooter Protection and Response project will integrate sensors to automatically detect indoor gunshots; provides potential victims, responders, and authorized personnel with information to enhance situational awareness; and enable automatic or manual control of the building - inhibiting the shooter - shortening the duration of an active shooter incident. U.S. Military Academy agreed to be used as a test bed for this effort and the results have wide ranging potential to be incorporated into soft or high value facilities.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> Evaluate Automated Unmanned Ground Vehicle for Patrol & Security to enhance and augment manned security resources by providing pre-positioned and roving outdoor surveillance, security, safety, and routine/repeatable. <p>FY 2022 Plans:</p>	0.451	0.354	0.488

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> Complete the evaluation of an Automated Unmanned Ground Vehicle for Patrol & Security to enhance and augment manned security resources by providing pre-positioned and roving outdoor surveillance, security, safety, and routine/repeatable. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>				
<p>Title: Storage and Safeguards</p> <p>Description: Properly securing critical assets to prevent access by unauthorized persons and implementing control measures that ensure access is limited to authorized persons is the foundation of physical security. This capability area will focus on equipment (e.g., locks, doors, etc.) designed to delay or stop unauthorized entry/access to a specified/localized area.</p> <p>Accomplishment: Develop a security container for aircraft use meeting customer-established metrics for system mass, dimension configuration, and environmental suitability. Integrate into a designated space on aircraft. Incorporate design features to meet customer-derived Concept of Operations and mission assurance metrics. Integrate design into existing aircraft configuration management and systems engineering concepts.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> Complete development of a security container for critical documents on aircraft through a concept demonstration. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> The Combatant Commands and the Services did not identify any material needs for this Budget Activity/Capability Area <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>		0.500	0.500	0.000
<p>Title: Prevention</p> <p>Description: The security procedures taken to discourage an adversary from accessing weapons of mass destruction or gaining unauthorized access to critical assets are at the heart of prevention. This capability area will focus on broad spectrum, generic efforts which have the ability to influence multiple areas.</p> <p>Accomplishment: Increase Counter-Unmanned Aircraft System (C-UAS) capabilities and operator effectiveness at strategic locations within the DoD by integrating radar, electronic warfare, and camera sensor turret systems into common C2; installing physical passive defense barriers at critical locations; and expanding radar capabilities.</p>		2.916	2.385	0.000

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>FY 2021 Plans:</p> <ul style="list-style-type: none"> • Complete the integration of the Crew-served mount with Smart Shooter trigger interrupt and ballistic solution to the M240B to manually engage a small UAS by providing a kinetic solution to the kill chain. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> • The Combatant Commands and the Services did not identify any material needs for this Budget Activity/Capability Area <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>			
<p>Title: Decision Support Systems</p> <p>Description: Decision support systems serve the management, operations, and planning levels of the DoD physical security enterprise to help to make decisions, which may be rapidly changing and not easily specified in advance. This capability area will focus on command and control equipment, projects related to the creation and enhancement of common operating pictures, and the establishment of common architectures / interface standards.</p> <p>Accomplishment: Platform for Integrated Command, Control, and Communication and Responsive Defense project is developing the next generation security system using an open fusion annunciator, a secure cloud infrastructure and integration with a mobile Common Operating Picture, to create a cost-effective sensor platform. This capability will eventually replace antiquated security systems that are based on high cost sensor technology with low-cost sensors used in fields like the automotive industry.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> • Develop a capability to allow a user to see color images at night by leveraging an electro-optical camera that is more cost effective than the commonly used infrared cameras. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> • Complete the development of a capability to allow a user to see color images at night by leveraging an electro-optical camera that is more cost effective than the commonly used infrared cameras. • Develop, test and evaluate an Electronic Security Systems Information Management System to track physical security. • Develop a mobile interface providing real-time situational awareness to blue force personnel by using a two way communication device which is fixed to blue force's arm or vehicle mount. 	3.551	2.721	4.773

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> Conduct formal testing of COTS Ground-Based Threat Detection Radar software that claims to provide filters and algorithms to reduce nuisance and false alarm rates in maritime application environments. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>			
<p>Title: Analytical Support</p> <p>Description: This capability area will focus on studies related to physical security topics and operational and management efforts related to day-to-day activities of the DoD Physical Security/Countering Nuclear Threats RDT&E Program.</p> <p>Accomplishment: The Maritime Expeditionary & Transit Security project demonstrated and evaluated how advanced non-lethal weapons technology employed for extended range will enhance and improve response capabilities for the transit protection mission. This project also determined how a flexible and scalable precision fire weapons system capability enhances/augments the current use of crew served weapons to counter fast approaching surface threats during High Value Unit transits.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> Next Generation Electronic Security System project will identify new sensor technology for use in future security systems. Leverage industry (e.g. automotive and autonomous operations) to identify low cost solutions. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> Complete Next Generation Electronic Security System project to identify new sensor technology for use in future security systems. Leverage industry (e.g. automotive and autonomous operations) to identify low cost solutions. <p>FY 2021 to FY 2022 Increase/Decrease Statement: The decrease in FY 2022 is the result of an internal realignment of funds within the department for National Defense Strategy priorities.</p>	1.592	0.648	0.557
Accomplishments/Planned Programs Subtotals	34.502	24.654	21.317

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

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D. Acquisition Strategy
N/A

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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years - Closed Out Efforts	Various	Various : Various	201.433	-		-		-		-		-	-	-	-
Tactical Security System	MIPR	Multiple Performers : Multiple Locations	4.345	1.150		-		-		-		-	-	-	-
Portable Intrusion Detection System	MIPR	AFLCMC : Hanscom AFB, MA	3.962	1.000		-		-		-		-	-	-	-
Physical Security Enterprise & Analysis Program	Various	Multiple Performers : Multiple Locations	10.192	-		0.267		2.813		-		2.813	Continuing	Continuing	-
Virtual Reality Synthetic Boat and Warning Shot Simulator	MIPR	Multiple Performers : Multiple Locations	0.839	0.131		-		-		-		-	-	-	-
Secure Tactical Communications Module	MIPR	Multiple Performers : Multiple Locations	0.826	0.798		-		-		-		-	-	-	-
Flexible Fire Control System	MIPR	Multiple Performers : Multiple Locations	0.934	1.400		-		-		-		-	-	-	-
Alert Attack Resistant Container	MIPR	Naval Facilities Engineering and Expeditionary Warfare Center : Port Hueneme, CA	1.119	0.500		-		-		-		-	-	-	-
Stabilized Crew-Served Heavy Machine Gun Mount	MIPR	NSWC : Crane, IN	-	0.614		-		-		-		-	-	-	-
Joint Expeditious Surface-Threat Sonar Capability	MIPR	TBD : TBD	-	1.499		2.406		-		-		-	-	-	-
Counter UAS Capability for DoD	MIPR	Various Performers : Various Locations	-	4.868		5.500		-		-		-	-	-	-
Wide Area Surveillance & Detection System with Light Detection and Ranging	MIPR	TBD : TBD	-	2.000		1.000		-		-		-	-	-	-

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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mobile Underwater Threat Imaging System	MIPR	TBD : TBD	-	0.860		0.610		-		-		-	-	-	-
Real-Time Video Enhancement Software	MIPR	TBD : TBD	-	1.200		1.300		-		-		-	-	-	-
Affordable Counter Small UAS Situational Awareness	MIPR	TBD : TBD	-	1.600		1.400		-		-		-	-	-	-
Handheld Force Protection Command and Control	MIPR	TBD : TBD	-	0.900		1.200		-		-		-	-	-	-
Light Detection and Ranging Change and Shape Detection	MIPR	TBD : TBD	-	1.500		1.300		-		-		-	-	-	-
Automated Unmanned Ground Vehicle for Patrol & Security	MIPR	TBD : TBD	-	0.600		0.600		-		-		-	-	-	-
Effective/Affordable Night Time Color Camera	MIPR	TBD : TBD	-	1.500		1.300		-		-		-	-	-	-
Marine Mammal Program/ Cooperative Vigilance	MIPR	TBD : TBD	-	0.747		0.695		-		-		-	-	-	-
Integrated Multi-Sensor Perimeter Awareness with Intelligent Light Detection and Ranging System of Systems	MIPR	TBD : TBD	-	0.850		0.750		-		-		-	-	-	-
Near-Shore Unified Tactical Response (NUTR) Battlefield Objective Navigation Display (BOND)	MIPR	TBD : TBD	-	0.300		0.300		-		-		-	-	-	-
Security Controlled Unmanned Aerial Airfield System	MIPR	TBD : TBD	-	0.840		0.814		-		-		-	-	-	-

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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Automated Installation Entry Multiple Authentication Fast Lanes	MIPR	TBD : TBD	-	-		-		2.027		-		2.027	Continuing	Continuing	-
Deep Learning Real Time Adaptive Learning Monitoring of Sound Velocity Profile	MIPR	TBD : TBD	-	-		-		1.530		-		1.530	Continuing	Continuing	-
Development, Test and Evaluation of an Electronic Security Systems Information Management System	MIPR	TBD : TBD	-	-		-		1.444		-		1.444	Continuing	Continuing	-
Electronic Harbor Security System–Sensor Track Fusion	MIPR	TBD : TBD	-	-		-		0.854		-		0.854	Continuing	Continuing	-
Enterprise Ready Tactical Assault Kit	MIPR	TBD : TBD	-	-		-		2.750		-		2.750	Continuing	Continuing	-
Improved UUV Detection and Tracking Using the AN/WQX-2 Sonar	MIPR	TBD : TBD	-	-		-		1.950		-		1.950	Continuing	Continuing	-
Next Generation Electronic Security System	MIPR	TBD : TBD	-	-		-		1.200		-		1.200	Continuing	Continuing	-
Self Homing and Event Triggered / Assessment DroneAerial PS Assessment	MIPR	TBD : TBD	-	-		-		1.275		-		1.275	Continuing	Continuing	-
Wide Area Surveillance & Detection System with Radar	MIPR	TBD : TBD	-	-		-		1.386		-		1.386	Continuing	Continuing	-
Sonar Navigated Autonomous Grabber	MIPR	TBD : TBD	-	-		-		1.546		-		1.546	Continuing	Continuing	-

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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Automated Neural Classification of Seismic and Acoustic Sensors	MIPR	TBD : TBD	-	-		-		1.337		-		1.337	Continuing	Continuing	-
Subtotal			223.650	24.857		19.442		20.112		-		20.112	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years Completed Efforts	Various	Various Performers : Various Locations	5.436	-		-		-		-		-	-	-	-
Nuclear Security Subject Matter Experts	MIPR	Applied Research Laboratories, The University of Texas : Austin, Texas	1.370	0.225		0.225		-		-		-	-	-	-
Nuclear Matters Analytical Cell for Nuclear Deterrence	IA	DOE/Sandia National Laboratory : Albuquerque, NM	3.000	4.200		-		-		-		-	-	-	-
Nuclear Matters SIRC/ NDERG Support	Option/ T&M	SAIC : McLean, VA	2.200	0.166		-		-		-		-	-	-	-
Nuclear Matters Technical Support	IA	Department of Health and Human Services : Bethesda, MD	1.633	1.500		-		-		-		-	-	-	-
PSEAG Support	MIPR	Air Force Civil Engineer Center : Tyndall AFB, FL	-	0.575		0.575		-		-		-	-	-	-
Nuclear Matters/PSEAG Support	MIPR	TBD : TBD	-	-		1.762		-		-		-	-	-	-
DoD Electronic Security System Analysis	MIPR	Office of Naval Research : TBD	-	0.450		-		-		-		-	-	-	-
PSEAG Interoperability	MIPR	TBD : TBD	-	-		-		0.455		-		0.455	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 162 / Nuclear and Conventional Physical Security
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Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			13.639	7.116		2.562		0.455		-		0.455	Continuing	Continuing	N/A

Remarks
NA

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years Completed Efforts	Various	Multiple Performers : Multiple Locations	10.687	-		-		-		-		-	Continuing	Continuing	-
Test & Evaluation Oversight	MIPR	SPAWARSYSCEN Atlantic : Charleston, SC	-	0.125		0.125		-		-		-	Continuing	Continuing	-
Counter Intrusion / Counter Unmanned Aircraft System	MIPR	Defense Technical Information Center - Various Performers : Various Locations	-	0.500		0.500		-		-		-	Continuing	Continuing	-
Development, Test and Evaluation of an Electronic Security Systems Information Management System	MIPR	TBD : TBD	-	0.690		0.750		-		-		-	Continuing	Continuing	-
Electronic Harbor Security System-Sensor Track Fusion	MIPR	Applied Research Laboratory/University of Texas (Through NAVSEA) : Austin, TX	-	0.750		0.300		-		-		-	Continuing	Continuing	-
Next Generation Electronic Security System	MIPR	NIWC-LANT : Charleston, SC	-	-		0.700		-		-		-	Continuing	Continuing	-
Test & Evaluation of Maritime Application Environment Radar	MIPR	TBD : TBD	-	-		-		0.750		-		0.750	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 162 / Nuclear and Conventional Physical Security
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Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			10.687	2.065		2.375		0.750		-		0.750	Continuing	Continuing	N/A

Remarks

NA

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Years - Completed Efforts	Various	Multiple Performers : Multiple Locations	6.567	-		-		-		-		-	Continuing	Continuing	-
Management Services	TBD	Multiple Performers : Multiple Locations	-	0.464		0.275		-		-		-	Continuing	Continuing	-
Subtotal			6.567	0.464		0.275		-		-		-	Continuing	Continuing	N/A

Remarks

NA

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract										
Project Cost Totals											254.543	34.502		24.654		21.317		-		21.317	Continuing	Continuing	N/A

Remarks

NA

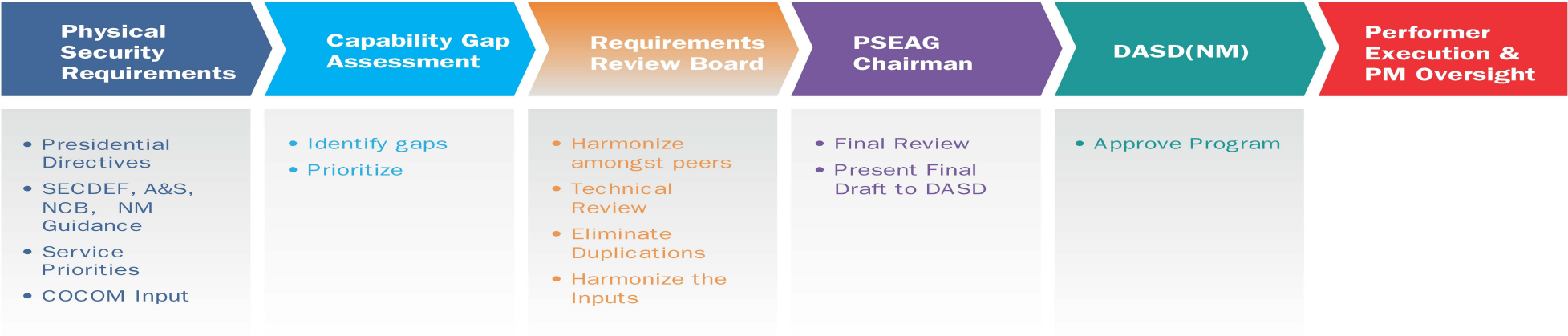
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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 162 / Nuclear and Conventional Physical Security



PSEAG REQUIREMENTS PROCESS





Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 162 / Nuclear and Conventional Physical Security

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Access Control				
Access Control	1	2013	4	2026
Analytical Support				
Analytical Support	1	2013	4	2026
Decision Support				
Decision Support	1	2013	4	2026
Detection & Assessment				
Detection & Assessment	1	2013	4	2026
Installation & Transport Security				
Installation & Transport Security	1	2013	4	2026
Prevention				
Prevention	1	2013	4	2026
Storage & Safeguards				
Storage & Safeguards	1	2013	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</i>	Project (Number/Name) 040 / <i>National Technical Nuclear Forensics Systems</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
<i>040: National Technical Nuclear Forensics Systems</i>	42.042	0.128	1.725	7.370	-	7.370	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding transferred from CNT to NTNF, P040. In fiscal year (FY) 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas. This resulted in degradation of the DoD (and by default, the U.S. Government's) ability to execute the nuclear forensics mission and deter adversaries. As the lead for providing the USG's post-detonation nuclear forensics capability, DoD is emphasizing the importance of this mission to ensure success.

Prior Year, FY 2020, and FY 2021 funding includes the funding associated with the CNT program.

A. Mission Description and Budget Item Justification

Per Presidential Policy Directive 42, Annex C, the DoD provides the USG post-detonation NTNF capability. Per DoDD 2060.04, OUSD(A&S) is the DoD office responsible for DoD's NTNF capabilities. This program is the only DoD RDT&E program focused on Advanced Component Development & Prototypes for NTNF capabilities.

Ensuring the USG can identify the source of nuclear material and hold those involved or supporting an attack accountable is critical to our national defense and security. Swift and accurate forensic and attribution (identification) capabilities are vital to supporting the President and Secretary of Defense in developing an appropriate, timely national response to a nuclear event and to prevent future attacks. An effective attribution capability ensures potential adversaries know that they will be held accountable if they use proxies or other non-traditional delivery of nuclear weapons against the U.S., U.S. interests, or allies. Both internal and independent studies indicate that continued improvement to the USG's NTNF capabilities is needed to sustain a credible deterrent against an attempted or actual nuclear attack.

Additionally, this program sustains perishable U.S. technical expertise at the operational DoD laboratories required to respond to a post-detonation NTNF event. DoD's laboratory capability in this area is limited by capacity and technical expertise. In FY 2018, Departments and Agencies began to shift research and development from NTNF to other mission areas, which resulted in degradation of the DoD's (and by default, the USG's) ability to execute the nuclear forensics mission and deter adversaries through the attrition of technical experts vital to the response. Sustained support of DoD's NTNF mission is crucial to not only preventing attrition of current capabilities and knowledge base, but in ensuring that this critical and unique deterrence capability is not lost, putting the security of the nation and the ability to deter specific kinds of nuclear attack at risk.

This PE can fund travel to support the requirements of this program.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 040 / National Technical Nuclear Forensics Systems

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>Title: NTNF Capability Development</p> <p>Description: The development of the Harvester Particulate Collection System is a modular pod that attaches to manned and unmanned aircraft to collect particulate airborne samples. The Modular Whole Air Collection System provides a complimentary, modular capability to collect air samples. Both of these projects are being leveraged by the Air Force Fleet Modernization initiative started in FY 2019.</p> <p>The United States Prompt Diagnostics System is a ground-based sensor solution that significantly enhances detection of prompt nuclear detonation signals in urban environments. The system transferred to the Air Force in FY 2019 and is currently undergoing an operational and readiness review.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Advance the development of passive capabilities to address prompt detection gaps. - Advance the development of new DoD NTNF laboratory capabilities and improved DoD collection capabilities to shorten timelines and improve confidence levels in reporting to national level decision makers. <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Further develop and transition technologies to address prompt detection gaps. - Advance DoD NTNF laboratory and collection capabilities to shorten timelines and improve confidence levels in reporting to national level decision makers. - Address lessons learned from the first Post-Detonation NTNF Pathfinder exercise and findings identified by the National Academy of Sciences. - Educate Military & Federal workforce in areas critical to the Stockpile Stewardship Program and to increase understanding of the history of nuclear weapons development, testing, and design. <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increase in funding is associated with the elimination of the CNT program and the transition of funding from CNT to NTNF to address this critical need.</p>	0.128	1.725	7.370
Accomplishments/Planned Programs Subtotals	0.128	1.725	7.370

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

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</i>	Project (Number/Name) 040 / <i>National Technical Nuclear Forensics Systems</i>

D. Acquisition Strategy
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 040 / National Technical Nuclear Forensics Systems
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
National Nuclear Technical Forensics Product Development	Various	Multiple Performers : Multiple Locations	38.681	-		-		7.175		-		7.175	Continuing	Continuing	-
AFTAC Projects	MIPR	Air Force Technical Applications Center : Patrick AFB, Florida	2.464	0.000		1.530		-		-		-	-	-	-
Subtotal			41.145	0.000		1.530		7.175		-		7.175	Continuing	Continuing	N/A

Remarks
NA

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
National Nuclear Technical Forensics Management Services- Prior Years	Various	Multiple Performers : Multiple Locations	0.093	-		-		-		-		-	Continuing	Continuing	-
Nuclear Testing, Diagnostics, Forensics and Stockpile Stewardship Course	IA	DOE : Livermore, CA	0.804	0.128		0.195		0.195		-		0.195	Continuing	Continuing	-
Subtotal			0.897	0.128		0.195		0.195		-		0.195	Continuing	Continuing	N/A

Remarks
NA

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		42.042	0.128	1.725	7.370	-	7.370	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense							Date: May 2021		
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics			Project (Number/Name) 040 / National Technical Nuclear Forensics Systems			

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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Remarks NA									
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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 040 / National Technical Nuclear Forensics Systems

	FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019			
	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

National Technical Nuclear Forensics																												
National Technical Nuclear Forensics																												

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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

National Technical Nuclear Forensics																												
National Technical Nuclear Forensics																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</i>	Project (Number/Name) 040 / <i>National Technical Nuclear Forensics Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>National Technical Nuclear Forensics</i>				
National Technical Nuclear Forensics	1	2013	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 041 / CNT Prevention ADC&P
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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
041: CNT Prevention ADC&P	-	7.138	6.237	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding transferred from Countering Nuclear Threats to National Technical Nuclear Forensics, P040. This decision affects Program Elements 0603161D8Z and 0604161D8Z by eliminating the CNT program.

A. Mission Description and Budget Item Justification

Funding transferred from Countering Nuclear Threats to National Technical Nuclear Forensics, P040. This decision affects Program Elements 0603161D8Z and 0604161D8Z by eliminating the CNT program.

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

	FY 2020	FY 2021	FY 2022
Title: Countering Nuclear Threats	7.138	6.237	-
Description: Funding transferred from Countering Nuclear Threats to National Technical Nuclear Forensics, P040. This decision affects Program Elements 0603161D8Z and 0604161D8Z by eliminating the CNT program.			
FY 2021 Plans:			
- Continue the advanced development of improved DoD capabilities that will enable a competitive edge over proliferating nations through the early identification of illicit activities and deny the acquisition of nuclear materials and weapons. Specifically:			
- Continue development of a project that develops a capability to identify previously undetectable uranium production facilities through the operationalization of new techniques that lower existing detection thresholds, enable CCMD detection of adversary activities in their area of responsibility, and support CNT planning.			
- Continue development of a project that develops a new capability that utilizes innovative means that will enable CCMD's to maintain awareness of State-level nuclear activities. This project is focused on National Defense Strategy priorities but has potential global applications.			
FY 2021 to FY 2022 Increase/Decrease Statement:			
Funding transferred from Countering Nuclear Threats to National Technical Nuclear Forensics, P040. This decision affects Program Elements 0603161D8Z and 0604161D8Z by eliminating the CNT program.			
Accomplishments/Planned Programs Subtotals	7.138	6.237	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</i>	Project (Number/Name) 041 / <i>CNT Prevention ADC&P</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Office of the Secretary Of Defense											Date: May 2021		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics				Project (Number/Name) 041 / CNT Prevention ADC&P					

Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Countering Nuclear Threats	Various	Various Performers : Various Locations	-	7.138		6.237		-		-		-	Continuing	Continuing	-
Subtotal			-	7.138		6.237		-		-		-	Continuing	Continuing	N/A

Remarks
Funding transferred from Countering Nuclear Threats to National Technical Nuclear Forensics, P040. This decision affects Program Elements 0603161D8Z and 0604161D8Z by eliminating the CNT program.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	7.138	6.237	-	-	-	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / Nuclear and Conventional Physical Security/National Technical Nuclear Forensics	Project (Number/Name) 041 / CNT Prevention ADC&P

	FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019			
	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

Countering Nuclear Threats	
Countering Nuclear Threats	

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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

Countering Nuclear Threats	
Countering Nuclear Threats	

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603161D8Z / <i>Nuclear and Conventional Physical Security/National Technical Nuclear Forensics</i>	Project (Number/Name) 041 / <i>CNT Prevention ADC&P</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Countering Nuclear Threats				
Countering Nuclear Threats	1	2013	4	2021