Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Defense Threat Reduction Agency											Date: February 2015	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	828.364	282.719	291.694	290.654	-	290.654	283.236	270.609	277.688	283.217	Continuing	Continuing
RA: *Information Sciences and Applications*	21.175	0.107	-	12.244	-	12.244	11.501	11.397	12.839	13.085	Continuing	Continuing
RD: *Detection Technologies*	-	-	-	29.893	-	29.893	29.689	30.137	30.832	31.447	Continuing	Continuing
RE: *Counter-Terrorism Technologies*	336.540	109.679	116.630	104.628	-	104.628	106.132	108.171	110.182	112.388	Continuing	Continuing
RF: *Forensics Technologies*	219.783	73.919	66.707	38.427	-	38.427	39.725	40.219	41.414	42.242	Continuing	Continuing
RG: *Defeat Technologies*	49.913	15.861	19.591	22.489	-	22.489	22.986	23.365	23.764	24.238	Continuing	Continuing
RI: *Nuclear Survivability*	26.641	5.939	5.570	6.191	-	6.191	6.640	6.727	6.814	6.942	Continuing	Continuing
RM: *WMD Counterforce Technologies*	74.392	29.644	29.346	20.717	-	20.717	22.846	23.216	23.739	24.212	Continuing	Continuing
RR: *Combating WMD Test and Evaluation*	1.810	0.092	-	-	-	-	-	-	-	-	Continuing	Continuing
RT: *Target Assessment Technologies*	98.110	47.478	53.850	56.065	-	56.065	43.717	27.377	28.104	28.663	Continuing	Continuing

Note

*Project RF-Detection and Forensics Technologies subdivides into Projects RD-Detection Technologies and RF-Forensics Technologies beginning in FY 2016.

A. Mission Description and Budget Item Justification

The mission of the Defense Threat Reduction Agency (DTRA) is to safeguard the United States and its allies from global weapons of mass destruction (WMD) threats by integrating, synchronizing, and providing responsive expertise, technologies, and capabilities. This mission directly reflects several national and Department of Defense (DoD) level guidance/vision documents. For Research, Development, Test & Evaluation, these documents include the National Security Strategy, Defense Strategic Guidance (Sustaining U.S. Global Leadership: Priorities for 21st Century Defense), 2014 Quadrennial Defense Review, National Strategy for Combating Terrorism, 2002 National Strategy to Combat WMD, Defense Planning Guidance, Guidance for Employment of the Force, 2014 DoD Strategy for Countering WMD, National Military Strategic Plan for the War on Terrorism, Joint Strategic Capabilities Plan (including the Nuclear Annex), and 2010 Nuclear Posture Review. To achieve this mission, DTRA has identified principal objectives along with strategies and tasks to ensure the objectives are met. These objectives are: 1) Ensure a safe, secure, and effective nuclear deterrent; 2) Anticipate emerging WMD threats; 3) Provide Combating WMD situational awareness; 4) Assess infrastructure and personnel vulnerabilities; 5) Prevent proliferation and use of WMD; 6) Defend against WMD threats; 7) Defeat WMD threats; 8) Recover from WMD consequences; and 9) Synchronize countering WMD activities.

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Defense Threat Reduction Agency	Date: February 2015
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counterproliferation Initiatives - Proliferation, Prevention and Defeat*

The Counterproliferation Initiatives - Proliferation, Prevention, and Defeat program element reduces WMD proliferation and enhances WMD defeat capabilities through advanced technology development. To accomplish this objective, the DTRA established the following projects: RA-Information Sciences and Applications, RD-Detection Technologies, RE-Counter-Terrorism Technologies, RF-Forensics Technologies, RG-Defeat Technologies, RI-Nuclear Survivability, RM-WMD Counterforce Technologies, and RT-Target Assessment Technologies. These projects support technology requirements in line with the Joint Functional Concepts (Chairman, Joint Chiefs of Staff Instruction 3170.01).

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	274.033	283.694	277.955	-	277.955
Current President's Budget	282.719	291.694	290.654	-	290.654
Total Adjustments	8.686	8.000	12.699	-	12.699
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	8.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	12.500	-			
• SBIR/STTR Transfer	-3.814	-			
• Realignments	-	-	1.750	-	1.750
• Programmatic - Increases	-	-	11.000	-	11.000
• Inflation	-	-	-0.051	-	-0.051

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2014	FY 2015
Project: RE: *Counter-Terrorism Technologies*		
Congressional Add: *Technology Solutions Supporting Operations in Subterranean Environments*	-	8.000
Congressional Add Subtotals for Project: RE	-	8.000
Congressional Add Totals for all Projects	-	8.000

Change Summary Explanation

The increase in FY 2016 from the previous President's budget submission is due to increased investments in Counter WMD-Terrorism, the Counterproliferation research and development program, and the development and integration of high-priority find, characterize and assess sensor technologies and supporting algorithms and software.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	Project (Number/Name) RA / *Information Sciences and Applications*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RA: *Information Sciences and Applications*	21.175	0.107	-	12.244	-	12.244	11.501	11.397	12.839	13.085	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Information Sciences and Applications project provides technical reachback support to create decision advantage for the United States and our allies through improved situational understanding across the complete Combating Weapons of Mass Destruction (CWMD) mission space. The Technical Reachback effort provides 24 hour/7 days per week information and analyses on potential impacts of a weapon of mass destruction (WMD) event to warfighters and first responders in consult with the DTRA's CWMD research and development subject matter experts. This effort develops and integrates capabilities and processes to support assessment and estimation of WMD effects and consequences, to include secondary and tertiary effects. This project has also provided support (through FY 2014) to international CWMD science and technology cooperation by developing modifications, improvements, or new technologies and information tools suitable for foreign release and cooperative efforts.

The decrease from FY 2014 to FY 2015 was due to the completion of efforts in building partner capacity development activities. The increase from FY 2015 to FY 2016 is due to the realignment of funding for Technical Reachback from Project RM-WMD Counterforce Technologies to Project RA to better reflect the nature of those activities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RA: Information Sciences and Applications	0.107	-	12.244
Description: Project RA develops innovative technologies and modeling and simulation capabilities and provides technical reachback support to create decision advantage for the United States and our allies through improved situational understanding across the complete CWMD mission space. ***FY 2014 Accomplishments:*** - Continued modifications and capability improvements to vulnerability assessment software and integrated WMD. ***FY 2016 Plans:*** - Continue development of global synthetic population and activity database for modeling secondary and tertiary effects using agent-based, socially coupled simulations to enable rapid modeling of infectious disease propagation and impacts of population behaviors and movement after a WMD event. - Develop detailed models of specified nuclear facilities to analyze vulnerabilities and estimate hazard.			
Accomplishments/Planned Programs Subtotals	0.107	-	12.244

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RA / *Information Sciences and Applications*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	21.879	28.785	29.949	-	29.949	32.901	32.365	32.780	33.433	Continuing	Continuing
• 151/0605502BR: *Small Business Innovation Research*	9.700	-	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

Technical Reachback will provide information and analysis on potential impacts of WMD events, to include secondary and tertiary effect, to all requests from warfighters and first responders within the requestor's decision cycle.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	Project (Number/Name) RD / *Detection Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RD: *Detection Technologies*	-	-	-	29.893	-	29.893	29.689	30.137	30.832	31.447	Continuing	Continuing

Note

*Project RF-Detection and Forensics Technologies subdivides into projects RD-Detection Technologies and RF-Forensics Technologies beginning in FY 2016.

A. Mission Description and Budget Item Justification

The United States has long recognized the challenges associated with a state actor losing custody of a nuclear weapon or of a violent extremist organization gaining control of such a device. The Defense Threat Reduction Agency's research and development mitigates these challenges by enabling Countering Weapons of Mass Destruction efforts through advancing radiation detection capabilities. There are physical limits to the efficacy of traditional radiation detection, and the successful recovery or interdiction of a weapon may depend on detection capabilities that apply much earlier in the nuclear threat chain continuum. The nuclear threat chain continuum can be defined as the entire spectrum of activities that might lead to the state loss or violent extremist organization acquisition of a nuclear weapon. Beginning FY 2016, Project RD will conduct research, development, test, & evaluation (RDT&E) to 1) advance detection—both sensor technology and related methodologies—for signatures/indicators associated with nuclear threat enablers such as nuclear expertise, financing, or unique materials in order to advance U.S. Government capabilities to detect and interdict such threats; and 2) locate, identify, and track Special Nuclear Material by integrating new technologies into detection systems and delivering prototypes for evaluation and further procurement by Services/Special Mission Units. These efforts support Department of Defense (DoD) requirements for combating terrorism, counter/nonproliferation, and homeland defense.

The increase from FY 2015 to FY 2016 is due to the subdivision of Project RF-Detection and Forensics Technologies into projects RD-Detection Technologies and RF-Forensics Technologies beginning in FY 2016.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RD: Detection Technologies	-	-	29.893
Description: Project RD conducts RDT&E to detect, locate, identify, track, and interdict nuclear and radiological threats, which include weapons, material, and enablers to their acquisition and development such as nuclear expertise, financing, or unique technologies. Efforts support DoD requirements for combating terrorism, counter/nonproliferation, and homeland defense.			
FY 2016 Plans: - Analyze nuclear threat signatures to improve or integrate their collection into sensor systems. - Integrate nuclear threat analysis algorithms into existing systems to test and evaluate their effectiveness in reducing processing time. - Demonstrate, test, and field systems to remotely monitor small and wide areas which may produce or contain nuclear threats.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RD / *Detection Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Design and fabricate prototype passive detection systems for determining the location and signature of nuclear material and test and characterize developmental prototype passive detection systems. - Improve performance of new detector materials; imaging and spectroscopy systems; and signals analysis methods through rigorous laboratory and field testing. - Integrate advances in materials science into lightweight, high-resolution radiation spectrometers for use in field operations. - Transition near-term technologies to generate prototypes and design packages that will assist operational users. - Conduct advanced/operational testing and evaluation of radiation detection systems to assess their performance. - Develop and build a new high resolution detector with reduced weight and improved form factors that can be concealed in container consistent with the operational environment. - Integrate new cellular technology into the R/N search network to ensure rapid flow of data from detectors. - Exploit the prototype testing of Oak Ridge National Laboratory to develop an operationally useful roadside detector capable of detecting nuclear material in moving vehicles. - Test and evaluate the integration of high resolution detectors with lower resolution detectors to determine the potential to meet threshold R/N detection requirements.			
Accomplishments/Planned Programs Subtotals	-	-	29.893

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	-	-	26.401	-	26.401	26.893	27.430	28.039	28.600	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 Department of Energy National Laboratories, DoD laboratories, and DoD Services. In concert with anticipated/potential end-users define requirements for the development of fieldable prototype systems. These systems are both stand-alone systems and components of larger, integrated systems. When possible, transition stand-alone systems to programs of record or to the commercial sector for further development or distribution. Transition system components via incorporation into larger, existing systems as upgrades that advance the state-of-the art of radiation detection.

E. Performance Metrics

Integration of three nuclear signatures into existing Intelligence Community production and analysis cycles.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RD / *Detection Technologies*

Successful development of a new class of semiconductor detectors that increase resolution and compactness of imaging systems.
Improvements to detection system algorithms that result in improved detection factors such as range, accuracy, sensitivity, and time.
Receipt of 3D Polaris system incorporating a high-resolution focal plane for increased accuracy.
Receipt of an ultra-compact, low-power, high-resolution spectrometer for test and evaluation.
Receipt of two organic scintillators for test and evaluation.
Receipt of prototype detection equipment incorporating nanosemiconductors for test and evaluation.
Receipt of prototype wearable neutron detection device for test and evaluation and user feedback.
Receipt of solid state neutron detectors for test and evaluation.
Receipt of initial prototype trace analysis kit for test and evaluation and user feedback.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RE / *Counter-Terrorism Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RE: *Counter-Terrorism Technologies*	336.540	109.679	116.630	104.628	-	104.628	106.132	108.171	110.182	112.388	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Counter-Terrorism Technologies project is an over-arching project that develops and transitions a full spectrum of new technologies to counter emergent weapons of mass destruction (WMD) thus enabling warfighters to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, nuclear production, storage, and weaponization facilities and systems. This high priority project focuses on support to the U.S. Special Operations Command (USSOCOM). Through enhancing USSOCOM capabilities, this project supports the highest priority mission areas in the National Security Strategy, the National Strategy to Combat WMD, the National Military Strategy to Combat WMD, the Quadrennial Defense Review, and the Guidance on the Employment of the Force. The following efforts are included:

The CWMD-T technologies program builds upon collaborative efforts with the warfighter. This program develops proofs of concept and subsequent advancements in research, development, testing, and evaluation and provides multi-mission capabilities that may be applied throughout the entire spectrum of warfare while significantly eliminating collateral damage. The CWMD-T technologies program develops technologies to enable the warfighter to locate, identify, characterize, and access Chemical, Biological, Radiological, and Nuclear WMDs, their production and storage facilities, and associated enablers at multiple nodes along the terrorist development/acquisition pathway in order to disrupt, delay, degrade, destroy, or deny WMDs while minimizing risk to U.S. forces.

The Counter WMD-Terrorism (CWMD-T) Counterproliferation research and development (R&D) program is a collaborative effort with USSOCOM in which DTRA manages and sub-allocates a portion of this funding directly to USSOCOM to develop warfighter-unique technologies in support of USSOCOM's counterterrorism and counterproliferation mission. New counterterrorism and counterproliferation technologies are developed under USSOCOM management, and in coordination with DTRA, to provide warfighters with the operational capability to counter WMD threats.

Under Project RE, the USSOCOM CWMD-T Support Program integrates and federates all-source intelligence and other information with operational analysis to support Combatant Command (CCMD) planning processes related to CWMD-T. Research is focused on developing and improving technologies to ingest, organize, interpret, and operationalize large amounts of data from many sources, multiple formats, and all relevant classification levels to provide the warfighter with a dynamic picture of the WMD-T operational environment.

The increase from FY 2014 to FY 2015 was due to increased investments in technology solutions supporting operations in subterranean environments. The decrease from FY 2015 to FY 2016 is due to the deferment of lower priority projects until further maturation in technology readiness level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RE: Counter-Terrorism Technologies	109.679	108.630	104.628

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RE / *Counter-Terrorism Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016

Description: Project RE provides R&D support to Joint U.S. Military Forces, specifically USSOCOM, in the areas of Explosive Ordnance Disposal (EOD) Device Defeat; Counter WMD (CWMD) technologies for warfighters; the USSOCOM Combating WMD – Terrorism Support Program; and oversight of counterproliferation R&D resources sent directly to USSOCOM for warfighter-unique counterproliferation technologies.

FY 2014 Accomplishments:
- Continued other planned development and transitioned new counterproliferation technologies for Joint U.S. Military Forces to counter WMD, enabling warfighters to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities.
- Continued work on successive multi-year efforts to develop high fidelity test articles and enhanced electronic test objects for the EOD Device Defeat program.
- Developed impede tools for Improvised Explosive Device (IED) triggers.
- Continued to support Combatant Commanders' planning efforts related to CWMD-T.
- Continued multi-year efforts to develop and transition innovative CWMD tools designed to locate, identify, characterize, assess, and attack WMD production and storage facilities with minimal-to-no collateral damage or loss of life.
- Built precision shaped charges using a proven manufacturing process through the use or modification of an existing shaped charge design.
- Transitioned next generation imaging technologies to allow EOD forces advanced diagnostic capabilities.
- Continued to improve and further enhance the usability and capability of the CWMD-T global dynamic picture of the operating environment for use by the DoD and U.S. Government Community of Interest. Incorporated need-to-know verification.
- Continued to improve upon Combatant Commanders' planning efforts related to CWMD-T by successfully releasing improvements to automated planning and analyst support tools for large-scale data management and information extraction.
- Began development/integration of an Intent Model to address human socio-cultural and behavioral aspects in existing Causal Bayesian Networks.
- Applied developmental tools to formulate a comprehensive summary of a biological threat in a specific CCMD Area of Responsibility
- Integrated and installed a system for automated data extraction of more than 200,000 documents per day from numerous sources across the DoD, Intelligence Community, other US Government Agencies, and numerous non-Government sources with cataloging capabilities for efficient and quick recall of stored information for analysis.

FY 2015 Plans:

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RE / *Counter-Terrorism Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Continue other planned development and transition of new counterproliferation technologies for Joint U.S. Military Forces to counter WMD, enabling warfighters to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Continue work on successive multi-year efforts to develop high fidelity test articles and enhanced electronic test objects for the EOD Device Defeat program. - Develop impeded tools for IED triggers. - Continue to support Combatant Commanders' planning efforts related to CWMD-T. - Continue multi-year efforts to develop and transition innovative CWMD tools designed to locate, identify, characterize, assess, and attack WMD production and storage facilities with minimal-to-no collateral damage or loss of life. - Build precision shaped charges using a proven manufacturing process through the use or modification of an existing shaped charge design. - Transition next generation imaging technologies to allow EOD forces advanced diagnostic capabilities. - Integrate Natural Language Processing and Machine Reading capabilities into knowledge discovery and data/information pipeline for Combatant Command CWMD-T WMD analysis and planning. - Begin application of Natural Language Processing to audio, photographic, and videographic data. ***FY 2016 Plans:*** - Continue other planned development and transition of new counterproliferation technologies for Joint U.S. Military Forces to counter WMD, enabling warfighters to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Continue work on successive multi-year efforts to develop high fidelity test articles and enhanced electronic test objects for the EOD Device Defeat program. - Develop tools used to impede IED triggers and conduct render safe diagnostics validation tests on emergent threat articles. - Continue to support Combatant Commanders' planning efforts related to CWMD-T. - Continue multi-year efforts to develop and transition innovative CWMD tools designed to locate, identify, characterize, assess, and attack WMD production and storage facilities with minimal-to-no collateral damage or loss of life. - Build precision shaped charges using a proven manufacturing process through the use or modification of an existing shaped charge design. - Transition next generation imaging technologies to allow EOD forces advanced diagnostic capabilities. - Begin exploration and application of techniques to extract information from audio, photographic, and videographic files. - Apply rational choice and game theory constructs to prototype advanced Bayesian models.			
Accomplishments/Planned Programs Subtotals	109.679	108.630	104.628

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RE / *Counter-Terrorism Technologies*

	FY 2014	FY 2015
Congressional Add: Technology Solutions Supporting Operations in Subterranean Environments	-	8.000
FY 2015 Plans: - Mature prototypes and demonstrate capabilities in support of the Army to disable and neutralize Weapons of Mass Destruction (WMD) and their associated facilities. DTRA will work with the Army to adapt solutions most applicable to the Army's needs and support FY 2015/FY 2016 Army experimentation and assessments of technologies to disable and neutralize underground facilities and their associated components (including WMD).		
Congressional Adds Subtotals	-	8.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	1.698	-	-	-	-	-	-	-	-	-	1.698

Remarks

D. Acquisition Strategy

Assess government, academic, and industrial performers and make selections based upon a "best fit for task" criteria. Common awardees include DoD Services, Laboratories, Department of Energy National Laboratories, and specialized university laboratories. The USSOCOM Combating WMD – Terrorism Support Program uses an evolutionary acquisition profile leveraging ongoing Defense Advanced Research Projects Agency and National Lab research programs in Natural Language Processing, Machine Reading, visual analytics directly linked to USSOCOM WMD Enterprise and supporting all Combatant Command WMD-T plans.

E. Performance Metrics

Number of technologies developed, delivered, proof of concept demonstrations, and successful Military Utility Assessments. A high priority focus of these metrics is increasing potential mission success and reducing the number of current gaps in Special Operations Forces capabilities to counter WMD.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RF / *Forensics Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RF: *Forensics Technologies*	219.783	73.919	66.707	38.427	-	38.427	39.725	40.219	41.414	42.242	Continuing	Continuing

Note

*Project RF-Detection and Forensics Technologies subdivides into Project RD-Detection Technologies and Project RF-Forensics Technologies beginning in FY 2016.

A. Mission Description and Budget Item Justification

The Forensics Technologies project under the Counterproliferation Initiatives - Proliferation, Prevention and Defeat Program Element emphasizes the advanced technology development and engineering portion of the overall National Technical Nuclear Forensics (NTNF) effort. This project supports the attribution process through development, demonstration, and transition of improved post-detonation NTNF capabilities in the areas of materials collection, debris diagnostics, materials analysis, prompt diagnostics, and device reconstruction. Efforts under this project also support international peacekeeping and nonproliferation objectives, on-site and aerial inspections and monitoring, on-site sampling and sample transport, and on- and off-site analysis to meet forensic, verification, monitoring, and confidence-building requirements. Prior to FY 2016, Project RF included funding to detect, locate, identify, track, and interdict nuclear and radiological threats. This included weapons, material, and enablers to their acquisition and development, such as nuclear expertise, financing, or unique technologies. Efforts support Department of Defense (DoD) requirements for combating terrorism, counter/nonproliferation, and homeland defense.

The decrease from FY 2014 to FY 2015 was due to reduced investment in novel advanced nuclear/radiological detection technologies and restructuring DoD-relevant monitoring and verification activities in support of the DoD proliferation monitoring mission. The decrease from FY 2015 to FY 2016 in Project RF is due to the realignment of nuclear threat detection activities into Project RD-Detection Technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RF: Forensics Technologies	73.919	66.707	38.427
Description: Through FY 2015, Project RF includes funding to 1) develop technologies, systems and procedures for post detonation nuclear forensics, on-site and off-site analysis to meet forensic, verification, monitoring and confidence-building requirements, and 2) to detect, locate, identify, track, and interdict nuclear and radiological threats, which include weapons, material, and enablers to their acquisition and development such as nuclear expertise, financing, or unique technologies in support of DoD requirements for combating terrorism, counterproliferation and nonproliferation, homeland defense, and international initiatives and agreements. In FY 2016 this project focuses on developing technologies, systems and procedures for monitoring, verification and confidence-building requirements, and for post detonation nuclear forensics, including on-site and off-site forensic analysis.			
FY 2014 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RF / *Forensics Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Conducted near-source strong-motion experiments using small High Explosive shots and lasers to generate intense shocks in soil-like materials. This, coupled with high fidelity analysis, improved confidence in regional seismic monitoring and improved the capability for detection and identification of low yield and evasive testing. - Conducted field experiments to investigate the detectability of underground electromagnetic pulses for purposes of monitoring compliance with nuclear testing prohibitions. - Conducted standoff imaging experiments for warheads deployed on strategic delivery systems that could lead to adoption of this technology for verification of future Strategic Arms Reduction Treaties. - Demonstrated a prototype for an on-site inspection system and virtual training tool for nuclear materials production monitoring in support of the potential Fissile Material Cutoff Treaty and the Army nuclear disablement mission. - Developed and tested advanced materials for particulate and gaseous radionuclide emissions associated with underground nuclear testing, in support of Air Force and international treaty monitoring requirements. - Delivered initial look-up tables as a stop-gap to help the Air Force Technical Applications Center predict the optimal window of opportunity for radionuclide gas detection (e.g., Xe-133) and estimated surface concentration. - Explored international partnerships and designed high explosive field tests to improve confidence in seismic and infrasound international monitoring systems. - Continued preparations for radiological/nuclear (R/N) detector program of record decisions. - Expanded the level of non-radiological sensor support for R/N search operations. - Developed, accelerated development where appropriate, demonstrated, and fielded (prototype) upgraded technical capabilities for prompt diagnostics (under DISCREET OCULUS and MINIKIN ECHO), debris sample collection, sample analysis, modeling to support nuclear device reconstruction, and forensics data to lower uncertainties/increase confidence and improve timeliness of technical nuclear forensics conclusions. Included development of new debris collection, field analysis concepts, in-laboratory timeline improvements, new signature development, improved modeling and simulation capabilities, and other supporting technologies; transfer of the prototype Harvester Particulate Airborne Collection System (PACS) to the operational user under the NTNF Joint Capability Technology Demonstration (JCTD); completed operational demonstration/exercise of the prototype Advanced Ground Sample Collection Platform (AGSCP) under the NTNF JCTD; and completed installation of a prototype ground-based prompt diagnostics system in the first of three US cities. - Developed methods to rapidly determine post-event nuclear weapon yields and reaction history by investigating alternative prompt nuclear weapons effects, effects on the environment, and developing/fielding prototype capabilities. - Continued exploiting all-source nuclear threat signatures, characteristics, and corresponding detection modalities; develop the proper tipping, queuing, and data fusion techniques and algorithms to enable the rapid and effective accumulation of all-source intelligence on nuclear threat scenarios. - Continued the design and fabrication of prototype passive detection systems for determining the location and signature of nuclear material; test and characterize developmental prototype passive detection systems.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RF / *Forensics Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Continued to develop and demonstrate alternative neutron detection technologies for replacement of helium-3 neutron detectors. - Completed the development of a modular based detection system using near term technologies to generate prototypes and design packages to assist operational users. - Completed the development of room temperature high-resolution spectrometers to determine signature of nuclear material. - Continued to develop Counter-Weapons of Mass Destruction (CWMD) network technologies. - Continued the development of force protection modifications to R/N detector technologies. - Developed and assessed software improvements to current R/N detector technologies. - Expanded the development of CWMD/Technical Support Group training technologies for R/N search equipment. - Conducted first-ever outdoor testing of active and passive detectors using Special Nuclear Material-based test objects. ***FY 2015 Plans:*** - Continue identifying all-source nuclear threat signatures, characteristics, and corresponding detection modalities; continue the identification and development of the proper tipping, queuing, and data fusion techniques and algorithms to enable the rapid and effective accumulation of all-source intelligence on nuclear threat scenarios. - Design and fabricate prototype passive detection systems for determining the location and signature of nuclear material; test and characterize developmental prototype passive detection systems. - Improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous laboratory and field testing. - Begin to integrate recent advances in materials science into lightweight, high-resolution radiation spectrometers for use in field operations. - Develop, demonstrate, and field methods to remotely monitor small and wide areas which may contain nuclear threats. - Research and develop advanced 3D imaging technologies for high resolution source characterization and identification to provide new and improved capabilities to detect, locate, identify, and characterize threat materials. - Begin transitioning multiple near term technologies to generate prototypes and design packages to assist operational users. - Conduct advanced and operational testing and evaluation of radiation detection systems. - Begin design, development, and fabrication of new radiological test objects. - Improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous laboratory and field testing. - Research, develop, test, evaluate, and deliver software tools and capabilities to locate and identify the signatures of Special Nuclear Materials on both existing and newly developed hardware platforms. - Continue development, accelerate development where appropriate, demonstrate, and field methods to remotely monitor small and wide areas which may contain nuclear threats.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Develop, accelerate development where appropriate, test, demonstrate, and field prototype ground-based sensor capabilities for post-detonation prompt diagnostics under DISCREET OCULUS. - Complete installation of prompt diagnostics systems in a second U.S. city. - Continue to develop, test, demonstrate, and field (prototype) upgraded technical capabilities for prompt diagnostics, debris collection, sample analysis, modeling to support nuclear device reconstruction, and forensics data to decrease timeline, lower uncertainties, and increase confidence in technical nuclear forensics conclusions. - Continue near-source strong-motion small-scale tests and high fidelity analyses for detection and identification of low yield and evasive testing. - Develop modular prototype using advanced materials for particulate and gaseous radionuclides detection of evasive testing in support of U.S. and international treaty monitoring requirements. - Provide science and technology development to support onsite inspections. - Begin implementing R/N detector Program of Record decisions. - Transition wide area search modular prototypes into an operational configuration to replace the current systems - Transition software improvements to current R/N detector technologies. - Transition selected ship search capabilities into an operational configuration for fielding to the Technical Support Groups. - Continue to enhance CWMD network technologies by exploiting the operational advantages of DoD's cellular communications program. - Continue to expand non-radiological sensor support for R/N search operations. - Expand the development of CWMD/Technical Support Group training technologies for R/N search equipment.			
FY 2016 Plans: - Complete development, test, demonstration, and fielding of prototype ground-based sensor capabilities in three U.S. cities for post-detonation prompt diagnostics under DISCREET OCULUS. - Continue to develop, test, demonstrate, and field (prototype) upgraded technical capabilities for prompt diagnostics, debris collection, sample analysis, modeling to support nuclear device reconstruction, and forensics data to decrease timeline, lower uncertainties, and increase confidence in technical nuclear forensics conclusions. - Continue to develop tools based on near-source small-scale strong-motion science to assist detection and characterization of low yield and evasive testing. - Conduct additional laboratory experiments with lasers to assess shock/seismic signatures from underground nuclear tests. - Develop international technical partnership for high explosive test calibration of seismic and infrasound elements of international monitoring stations. - Develop and flight-certify a modular prototype using advanced materials and techniques to collect and detect gaseous radionuclide signatures of evasive nuclear testing.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Develop long-term, optimal, integrated and operational solutions to detect, collect, and analyze gas and radionuclide signatures of nuclear testing. - Develop prototype cosmic-ray muon imaging solution for standoff detection of nuclear warheads in storage or deployed on strategic launch and delivery systems that could lead to adoption of this technology for verification of future Strategic Arms Reduction Treaties. - Validate alternate signatures of nuclear weapons testing and develop measurement techniques. - Evaluate advanced methods to better integrate the collection, detection, and analysis of low-yield or evasive nuclear weapons testing signatures. - Provide technical support for implementation and compliance with the Open Skies Treaty. - Develop infrastructure and capability for iterative testing, refinement, and integration of national monitoring capabilities. - Test and evaluate prototype version of the Knowledge Management Strategic Information System software for future Strategic Arms Reduction Treaty and other treaty database and notification needs. - Enhance the on-site inspection system and virtual training tool with additional operational scenarios for nuclear materials production monitoring in support of the Fissile Material Cutoff Treaty and the Army nuclear disablement/elimination mission. - Stand up National Monitoring and Verification test-bed ensemble for iterative tool and method testing and refinement.			
Accomplishments/Planned Programs Subtotals	73.919	66.707	38.427

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	34.595	35.061	9.547	-	9.547	10.128	10.443	10.684	10.899	Continuing	Continuing
• 121/0605000BR: *WMD Defeat Capabilities*	6.867	6.887	7.156	-	7.156	7.340	7.437	7.563	7.715	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 the Department of Energy National Laboratories, DoD laboratories, and DoD Services. Provide operationally effective monitoring and analysis capabilities and modernization of existing capabilities and tools to Air Force Technical Applications Center as prototype or capability demonstrations. In concert with anticipated/potential end-users such as Special Mission Units, define requirements for the development of field-able prototype systems. These systems are both stand-alone systems and

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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components of larger, integrated systems. When possible, transition stand-alone systems to programs of record or to the commercial sector for further development or distribution. Transition system components via incorporation into larger, existing systems as upgrades that advance the state-of-the art of radiation detection.

E. Performance Metrics

Testing of the first algorithm fusing new nuclear threat signature with existing all-source intelligence.
Development and operational acceptance of transitional technologies.
Completion of the Intelligent Personal Radiation Locator program to improve speed of end user detection.
Completion of the radiation sensor with tagging, tracking, and locating project to provide new capability for autonomous, low-visibility, long-endurance detection.
Completion and transition of the modular radiation detector system to better align detector form to user requirements.
Completion and transition of the Man-Portable Detection System to better align detector form to user requirements.
Testing of the first prototype hand-held, high-resolution detector to verify detector characteristics.
Completion of imaging and characterization test to down-select threat device characterization system for further development.
Delivery of three plutonium test objects that will simulate/represent larger quantities of material.
Delivery of two highly-enriched uranium test objects that will simulate/represent larger quantities of material.
Conduct/support end-to-end NTNF capabilities exercises and supporting demonstration(s).
Installation of prototype ground-based prompt diagnostics systems in three U.S. cities by the end of FY 2016.
Successfully test, demonstrate, field, and/or transition nuclear forensics technologies/capabilities to an operational customer.
Down-select new signatures, surrogate urban debris production routes, and technology requirements for field analysis capabilities.
Support development of NTNF capabilities through development of technologies/prototypes addressing gaps and shortfalls in DoD NTNF capabilities, and through participation in the interagency process. Note: More specific metrics associated with NTNF gaps and shortfalls are classified.
Demonstrate utility of alternate nuclear test signatures.
Deliver useful strong-shock based analysis tool.
Deliver advanced operational gas collection capability.
Deliver operational prototype of multi-mission tool kit.
Demonstrate effectiveness of cosmic-ray muon remote imaging of nuclear warhead in facilities and on platforms.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RG / *Defeat Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RG: *Defeat Technologies*	49.913	15.861	19.591	22.489	-	22.489	22.986	23.365	23.764	24.238	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defeat Technologies project develops, integrates, demonstrates and transitions innovative kinetic and non-kinetic weapon capabilities to expand traditional and asymmetric options available to Combatant Commanders (CCDRs) to deny, disrupt, and defeat adversarial use of weapons of mass destruction (WMD) while minimizing collateral effects from incidentally released agents. Technology development focuses on the physical or functional defeat of (1) chemical, biological, radiological and nuclear threat materials, (2) an adversary's ability to deliver the same, and (3) the physical and non-physical support networks enabling both. It does so through the systematic identification and maturation of advanced technologies capable of defeating WMD agents or agent based processes, then integrating them into weapons, delivery systems or rapid WMD elimination capabilities. This project includes developing specific WMD agent/agent-based process simulants, test infrastructure, and sampling capability required for effective development, testing, and evaluation of next-generation capabilities to ensure optimum weapon solutions are achieved based on this technology. The project addresses defeat of adversaries' offensive WMD programs through integration of current conventional weapons capabilities and next generation kinetic and non-kinetic solutions to provide full-spectrum asymmetric defeat options. The project addresses requirements delineated in the Quadrennial Defense Review and Strategic Planning Guidance as codified in the Joint Capabilities Integration and Development System, Service requirements documents, and Combatant Command and Agency Priority Lists for lethal and non-lethal Countering Weapons of Mass Destruction (CWMD) capability.

The increase from FY 2014 to FY 2015 was due to increased investment in CWMD Hard Target Defeat Weapons Technologies. The increase from FY 2015 to FY 2016 is due to increased investment to build and conduct the initial full-scale testing of the Next Generation of CWMD weapon concept.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RG: Defeat Technologies	15.861	19.591	22.489
Description: Project RG develops advanced technologies and weapon concepts and validates their applicability to C-WMD.			
FY 2014 Accomplishments: - Continued developing improvements for defeat of WMD in soft targets. - Continued maturation of diagnostic capability to meet emerging needs and field improved capabilities for agent defeat. - Completed preparations to award a contract by second quarter FY 2015 to develop the Heated and Mobile Munitions Employing Rockets (HAMMER) technology concept demonstration. - Continued Modular Autonomous Countering WMD System (MACS) component integration. - Continued designing MACS Family of Systems architecture.			
FY 2015 Plans: - Develop access denial or denial-of-use technologies for WMD targets.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RG / *Defeat Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Complete Next Generation Counter WMD weapon design. - Initiate full-scale lethality tests for Next Generation Agent Defeat weapon. - Continue work on functional defeat test-bed with initial test events. ***FY 2016 Plans:*** - Manufacture initial Next Generation CWMD weapon components and sub-systems and conduct sub-system and initial full scale static test. - Continue development of access denial or denial-of-use technologies for CWMD applications. - Continue functional defeat system development and testing. - Conduct MACS follow-on incremental component/system demonstration. - Conduct functional defeat system demonstration. - Transition initial MACS concept to Military Services/CCDRs. - Develop and integrate MACS Family of System Enabling Technologies. - Plan MACS Family of Systems component demonstration. - Mature diagnostic capability to meet emerging needs and field improved capabilities for agent defeat. - Initiate HAMMER Subsystem Test. - Complete HAMMER Weapon Design.			
Accomplishments/Planned Programs Subtotals	15.861	19.591	22.489

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	14.270	10.982	11.769	-	11.769	11.395	11.700	11.965	12.203	Continuing	Continuing

Remarks

D. Acquisition Strategy

Assess government, academic, and industrial performers and make selections based upon a "best fit for task" criteria. Common awardees include DoD Services' laboratories, Department of Energy National Laboratories, and specialized university laboratories. In addition, partnering with Government entities, such as the Air Force Life Cycle Management Center, enables the Defense Threat Reduction Agency to develop a sound transition strategy to the warfighter.

E. Performance Metrics

Complete MACS Operational Demonstration and transition technology to a Quick Reaction Capability program.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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Complete HAMMER weapon design and integration and conduct a technical demonstration.
Complete development and testing of improved CWMD biological agent defeat weapon fills to provide greater than 95% performance improvement over existing high explosive fills.
Push promising access denial or denial-of-use technologies for CWMD applications to Technology Readiness Level 4/5.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RI / *Nuclear Survivability*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RI: *Nuclear Survivability*	26.641	5.939	5.570	6.191	-	6.191	6.640	6.727	6.814	6.942	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Nuclear Survivability project develops Radiation Hardened Microelectronics and survivability standards; provides radiation dose assessments; and provides for the execution of force-on-force evaluations and nuclear weapons surety efforts to enhance the protection of nuclear resources.

The Nuclear Test Personnel Review (NTPR) Program, established in public law, confirms participation in nuclear testing and related events and provides radiation dose assessments for atomic veterans. The Defense Threat Reduction Agency (DTRA) provides subject matter expertise for the dose reconstructions. The NTPR is administered by the Department of Veterans Affairs and the Department of Justice for radiogenic disease compensation programs.

The Mighty Guardian force-on-force tests aid in satisfying requirements for the Military Services by providing denial of access to nuclear resources in all environments: operational, storage, and in transit. The results of the evaluations identify security vulnerabilities to weapons systems that are then addressed through targeted application of research and development projects requested by the resource owners. These projects are designed to demonstrate, test, and evaluate security enhancement systems prior to the Services' procurement.

Nuclear Weapons Surety, as tasked by the Department of Defense (DoD) Nuclear Weapon System Safety Program, provides Combatant Commands (CCMDs), Military Services, and Joint Chiefs of Staff with technical analyses, studies, research, and experimental data necessary to identify and quantify risks of plutonium dispersal and loss of assured safety due to accidents, fires, or natural causes during peacetime operations of the nation’s nuclear weapon systems. Additionally, this will provide studies necessary to quantify the probability of success against targeted terrorist attacks on DoD facilities, while leveraging these risk assessment advances. It also provides new and innovative technologies for the protection of nuclear resources in support of CCMDs and Military Services.

The decrease from FY 2014 to FY 2015 was due to the net impact of increased investment in stockpile logistics and decreased investment in nuclear surety in FY 2015. The increase from FY 2015 to FY 2016 is due to increased investment in the nuclear surety program.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RI: Nuclear Survivability	5.939	5.570	6.191
Description: Project RI provides the capability for DoD nuclear forces and their associated control and support systems and facilities in wartime to avoid, repel, or withstand attack or other hostile action, to the extent that essential functions can continue or be resumed after the onset of hostile action.			
FY 2014 Accomplishments: - Tested and characterized radiation effects on advanced 32nm technology.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Conducted Mighty Guardian XVI force-on-force test to evaluate nuclear security policy for the Prime Nuclear Airlift Force mission at Kirtland Air Force Base, NM. - Conducted research, development, test, & evaluation (RDT&E) on physical security technologies designed to enhance protection of the nuclear stockpile as determined by the Services. - Performed 1,600 written atomic veteran claim responses. ***FY 2015 Plans:*** - Develop Satellite Protection Standard. - Continue RDT&E on physical security technologies designed to enhance protection of the nuclear stockpile as determined by the Services. - Develop next generation of Defense Integration and Management of Nuclear Data Services (DIAMONDS) network and infrastructure design, leverage information technology (IT) improvements, and modernize DIAMONDS software code; and conduct preliminary design review and meet with users. - Continue out-of-cycle test planning and execution in support of Mighty Guardian XV and plan and execute Mighty Guardian XVII Force-on-Force test to evaluate nuclear security policy for convoy operations in support of Francis E. Warren Air Force Base, WY. Test will be conducted at Camp Guernsey, WY. - Address 1,200 written atomic veteran claim responses. ***FY 2016 Plans:*** - Publish Satellite Protection Standard. - Address 1,000 written atomic veteran claim responses. - Plan and execute Mighty Guardian XVIII force-on-force test to evaluate nuclear security policy at the Navy's Strategic Weapons Facility Pacific, Naval Base Kitsap, WA. - Continue the development of the next generation of DIAMONDS network and infrastructure design. - Leverage IT improvements and recommendations from industry/Agency. - Modernize DIAMONDS software code with design reviews and meeting with users for future needs/requirements. - Field test-bed system at select user sites and continue to evaluate system.			
Accomplishments/Planned Programs Subtotals	5.939	5.570	6.191

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	20.351	19.416	29.988	-	29.988	30.264	30.826	31.592	32.224	Continuing	Continuing

Remarks

D. Acquisition Strategy

Assess government and industrial performers and make selections based upon a "best fit for task" criteria which includes demonstrations of components and capabilities for transition. Common awardees include DoD Services' laboratories, Department of Energy National Laboratories, and specialized university laboratories.

E. Performance Metrics

Achieve Radiation Hardened and Radiation Hardened by Design 90nm application-specific integrated circuit design flow capability.
Successful completion of Mighty Guardian exercises is measured by completing:
- all necessary planning and logistics steps,
- troops arriving when required,
- training completed,
- execution of the exercise,
- redeployment of forces, and
- publishing a final report within 90 days of completion.

Successful completion of RDT&E for physical security technologies is determined by:
- performers completing the project on-time and within budget,
- all stated tasks in the statement of work/objectives are met,
- proper reporting and coordination of decision areas,
- receipt of final reports closing out the project, and
- transitioning the project to the requesting Military Service.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	Project (Number/Name) RM / *WMD Counterforce Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RM: *WMD Counterforce Technologies*	74.392	29.644	29.346	20.717	-	20.717	22.846	23.216	23.739	24.212	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Weapons of Mass Destruction (WMD) Counterforce Technologies project develops, integrates, demonstrates and transitions emerging/innovative technologies to find, characterize, plan for the defeat of, and assess WMD threats. The two major components of this project are: (1) WMD battlespace awareness and (2) counter WMD (CWMD) weapons effects and planning tools. WMD battlespace awareness efforts seek to provide warfighters with capabilities to find, characterize, and assess WMD threats. This project provides capabilities through the development and integration of multi-mission Unmanned Aerial Systems payloads to emplace sensing technologies, and remotely sense, identify, track, and target WMD-related threats; and, through the development and integration of low visibility, stand-off, and man-portable chemical agent and biological agent intelligence, surveillance, and reconnaissance technologies to sense, identify, track, target, and assess WMD-related threats. The CWMD weapons effects and planning tools effort develops modernized, fast-running, and validated CWMD planning tools and integrates modeling and simulation software to aid Combatant Commanders' targeting and aid weapons officers in choosing the proper weapon, fuze, and employment parameters to optimize the defeat of WMD and related hard targets.

The decrease from FY 2015 to FY 2016 is due to the realignment of funding for Technical Reachback from Project RM to Project RA-Information Sciences and Applications.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RM: WMD Counterforce Technologies	29.644	29.346	20.717
Description: Project RM provides (1) novel and enhanced weapons energetic materials and structures, full-scale testing of CWMD weapons effects, weapons effects modeling, and weapon delivery optimization, (2) WMD sensor, surveillance, and data processing technologies, and (3) Technical Reachback support.			
FY 2014 Accomplishments: - Developed and delivered Integrated Munitions Effectiveness Assessment (IMEA) software 11.1 (Software improvements include; Cratering model improvements Collateral Damage Estimation integration, Warfighter Wizard improvements, Large Caliber Penetrator enhancements). - Developed and delivered Vulnerability Assessment & Protection Option (VAPO)software 6.0 (Improved Blast Model/Ability to predict blast effects on complex 3D models/New close-in blast on concrete columns/Improved window response model/Added Forward Operating Base (FOB) models). - Developed and delivered Vulnerability Assessment & Protection Option (VAPO) software 6.1 (structural and human injury damage contours for 3D models).			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Delivered a modified version of Vulnerability Assessment & Protection Option (VAPO) software to the Norway Defense Estates Agency (NDEA) under the US/Norwegian Hardened Facility Analysis Project Agreement (HFA PA). - Completed WMD Aerial Collection System, Army Shadow Unmanned Aircraft System (UAS) integration R&D efforts as required for future Army procurement and fielding. - Conducted Shadow UAS and WACS payload launcher and Tactical Automatic Landing System qualification testing necessary for future Air Worthiness Certification. - Completed technical support requirements for Army validation of the WMD Aerial Collection System post-strike battle damage assessment. Operational Needs Statement now under consideration by the Army Council for Combatting Weapons of Mass Destruction Capability Working Group. - Conducted warfighter training on WMD Aerial Collection System hardware, and provided exercise support during the Warpath III and Ulchi Freedom Guardian USFK command post exercises. - Completed a comprehensive CBRN Air-Droppable, Remotely Deployed Sensor (CARDS) delivery system Proof-of-Concept demonstration culminating in development of the preliminary design for a platform incorporating a high-efficiency aerodynamic profile and propulsion system. - Planned and conducted a key Table Top Exercise (TTX) to solicit Community of Interest requirements for CBRN sensor emplacement operations and facilitate continued end-user input during the development process. - Conducted a VTOL Autonomous Payload Emplacement System (VAPES) precision emplacement proof-of-concept demonstration using both EO and IR optical navigation solutions, and custom designed an autopilot and sensor system on a VTOL platform. - Completed construction and instrumentation of the Robotics FIT sensor test bed. - Conducted extensive sensor verification and validation testing including operational demonstrations to leadership and other interested parties. - Conducted development of multi-mode sensor systems for use in detection of small-scale biological threats. - Initiated development of WMD Intelligence, Surveillance, and Reconnaissance (ISR) system architecture. - Conducted WMD ISR signature characterization and phenomenology research. - Developed WMD Intelligence, Surveillance, and Reconnaissance (ISR) system architecture. - Conducted WMD ISR signature characterization and phenomenology research. - Continued development and integration of agent based modeling capabilities, including secondary and tertiary effects linked with social behavior resulting from WMD insult. - Demonstrated Silent Scout Chemical/Rad Sensor. - Demonstrated Nano-scale Transformational Rad Tag. - Continued to support the Combatant Commands (CCMDs) with the further refinement and development of operation center critical technologies that will enhance the capability of rapid response in relation to next generational reachback capabilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RM / *WMD Counterforce Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Began development of technologies and methods for comprehensive WMD consequence assessment to potentially include PMESII (Political, Military, Economic, Social, Infrastructure, and Information) implications – supports United States Strategic Command's consequence of execution analyses. - Enhanced parallel version of transport and dispersion code to allow faster and more complex data analysis execution on high performance computing resources. - Supported requests for information providing technical advisory reachback support on WMD effects and consequences of over 2,080 requests for information.			
FY 2015 Plans: - Develop parallel version of transport and dispersion code to allow faster analysis execution on high performance computing resources. Coupled with FY 2014 enhancements, provide upgraded capability to run faster, finer, and larger analyses. - Develop and integrate agent based modeling capabilities. - Demonstrate a novel chemical/biological sensor for a CWMD Tagging, Tracking, and Locating application. - Demonstrate a multi-modal chemical sensor integrated in a Tagging, Tracking, and Locating device. - Conduct a demonstration of scintillating transformational material for CWMD application within an operational architecture. - Support U.S. Army Program Manager (PM) UAS in completing WMD Aerial Collection System transition activities, fielding, and procurement. - Design, integrate, and demonstrate CARDS payload captive carry system for CBRN sensor packages. - Conduct a CARDS system demonstration of precision emplacement using representative CBRN sensor packages. - Conduct Phase I demonstration of enhanced near-term bio-search/detection sensors for Department of Defense (DoD) and Intelligence Community customers. - Conduct down-select of multi-mode sensor systems for bio-terrorism threat detection. - Initiate Phase II development of select sensor systems for use in detecting small-scale biological labs. - Deliver the VAPO planning tool with improved infrastructure modeling capabilities, including secondary effects from improved vehicle borne improvised explosive device models and tertiary effects linked with social behavior resulting from WMD insult. - Develop coarse, worldwide population and activity database to enable rapid emergent refined, country level synthetic infrastructures for agent-based improved urban site modeling operational capabilities. - Deliver capabilities developed in FY 2014 (IMEA 11.1). - Demonstrate high performance computing integration using improved software infrastructure developed in FY 2014. - Develop Enhanced Tunnel/ Hard and Deeply Buried Targets defeat modeling capabilities in the areas of High Strength Concrete weapon penetration and Steep Slope cratering/rubble model. - Start development to support non-kinetic weapons effects and full-spectrum defeat capability. - Develop improved Agent Defeat modeling capabilities for WMD target attack planning.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RM / *WMD Counterforce Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Deliver Targeting/Weaponeering academics and targeting recommendation packages supporting CCMD requirements.			
FY 2016 Plans: - Transition initial biological search technologies (Bio-ISR Spiral 1) to DoD and Interagency end-users. - Continue technology development for enhanced area search, localization, and point detection/ identification tools for biological threats of interest (Spiral 2). - Initiate planning for Bio-ISR Spiral 2 demonstration of improved biological search technologies. - Demonstrate unmanned platform capable of high-altitude/long-range glide, vertical takeoff and landing transition and egress for covert emplacement of CBRN payloads/sensors. - Design, develop, integrate, and test computer vision, autonomous navigation on unmanned systems to enable precise CBRN payload emplacement. - Complete WMD Aerial Collection System transition activities, fielding, and procurement. - Deliver agent defeat modeling capabilities (Human Injury, Dynamic Pressure, and Structural Response) for the DTRA's Reachback mission. - Utilize high performance computing capabilities to enhance scalable model fidelity. - Enhance software development architecture for more efficient integration of modeling and simulation capabilities into planning tools. - Deliver prototype 64-bit version of counter WMD modeling and simulation planning tools for analysis of large data sets. - Develop improved agent defeat modeling capabilities for WMD target attack planning. - Deliver Targeting/Weaponeering academics and targeting recommendation packages for CCMDs. - Develop and demonstrate a low-visibility sensor / detection device for chemical search missions. - Demonstrate nano-material based sensor/reporting system for detection of biological/chemical threats. - Conduct prototype demonstration of scintillating transformational material for CWMD application.			
Accomplishments/Planned Programs Subtotals	29.644	29.346	20.717

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	14.660	13.787	13.526	-	13.526	13.642	13.958	14.427	14.714	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RM / *WMD Counterforce Technologies*

D. Acquisition Strategy

Assess government, academic, and industrial performers and make selections based upon a "best fit for task" criteria. Common awardees include DoD Services, Laboratories, DoE National Laboratories, and specialized university laboratories. Technologies are transitioned to users via Service and Interagency Program Management Offices (e.g. WMD Aerial Collection System transitioned via U.S. Army PM UAS; Counter WMD Planning Tools via Joint Munitions Effectiveness Manual Weaponeering System and Target Acquisition Workstation.

E. Performance Metrics

Completion of WMD Aerial Collection System transition activities, fielding, and procurement to U.S. Army PM UAS.
Demonstration of acceptable standoff detection range for WMD reconnaissance system.
Demonstration of a low-visibility sensor/detection device for Chemical search missions.
Demonstration of high performance computing integration using improved software infrastructure for enhanced modeling and simulation capabilities.
Demonstration of WMD Tag, Track, Locate technologies.
Complete test for computer vision, autonomous navigation on unmanned systems to enable precise CBRN payload emplacement.
Demonstration of unmanned platform capable of high-altitude/long-range glide, vertical takeoff and landing transition and egress for covert emplacement of CBRN payloads/sensors.
Delivery of counter WMD planning capabilities (Near Miss Lethality model/Multi-Hit Weapon model/Ultra-High Performance Concrete Penetration model/Large Caliber Penetrator modeling and simulation enhancements/Glass Curtain Wall model/Vehicle Borne Improvised Explosive Device model/Human Injury model/Blast Dynamic Pressure model/Structural Response model) to counter WMD planners.
Delivery of scheduled Targeting/Weaponeering academics to WMD defeat planners.
Delivery of requested target recommendation packages and weaponeering solutions to CCMDs.
Delivery of 64-bit version of counter WMD modeling and simulation planning tools for improved processing capability of large and complex data sets.
Transition of initial biological search technologies (Bio-ISR Spiral 1) to DoD and inter-agency end-users.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	Project (Number/Name) RR / *Combating WMD Test and Evaluation*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RR: *Combating WMD Test and Evaluation*	1.810	0.092	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project RR provides a unique national test bed capability for simulated WMD facility characterization, weapon-target interaction, and WMD facility defeat testing to respond to operational needs by developing and maintaining test beds used by the DoD, the Military Services, the Combatant Commanders and other Federal Agencies to evaluate the implications of WMD, conventional, and other special weapon use against U.S. military or civilian systems and targets.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RR: Combating WMD Test and Evaluation	0.092	-	-
Description: Project RR provides a unique national test bed capability for simulated WMD facility characterization, weapon-target interaction, and WMD facility defeat testing to respond to operational needs by developing and maintaining test beds used by the DoD, the Military Services, the Combatant Commanders and other Federal Agencies to evaluate the implications of WMD, conventional, and other special weapon use against U.S. military or civilian systems and targets. ***FY 2014 Accomplishments:*** - Provided test support to a program that demonstrated a Bremsstrahlung-based active interrogation system capable of detecting special nuclear material at standoff distances through various construction materials.			
Accomplishments/Planned Programs Subtotals	0.092	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 21/0602718BR: *WMD Defeat Technologies*	11.543	11.060	11.182	-	11.182	11.709	11.984	12.315	12.560	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RR / *Combating WMD Test and Evaluation*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RT / *Target Assessment Technologies*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
RT: *Target Assessment Technologies*	98.110	47.478	53.850	56.065	-	56.065	43.717	27.377	28.104	28.663	Continuing	Continuing

A. Mission Description and Budget Item Justification

For some weapons of mass destruction (WMD) targets and hard and deeply buried targets (HDBTs), physical destruction may not be possible, practical, or desirable with current conventional weapons and employment techniques. It may be possible or preferable to achieve operational objectives by denying or disrupting the mission or function of the target facility. Functional defeat, however, requires extensive and highly detailed analysis of the target. The functional defeat process includes finding and identifying a facility, characterizing its function and physical layout, determining its vulnerabilities to available defeat mechanisms, planning and executing an attack, assessing damage, and if necessary, suppressing reconstitution efforts and re-attacking the facility. Target Assessment Technologies develops for both the Combatant Commands (CCMDs) and the Intelligence Community (IC), the analytical tools and processes required to find and characterize WMD targets and HDBTs; and then, in near-real-time, assess the results of attacks against those targets. Overall objectives are to develop new methodologies, processes and technologies for detecting, locating, identifying, physically and functionally characterizing, modeling, and assessing new and existing hard and deeply buried targets to support physical or functional defeat. Applying these processes to WMD time-dependent target characterization and threat analysis presents a further technical challenge.

The increase from FY 2014 to FY2015 was due to increased investment in the development and integration of high-priority find, characterize and assess sensor technologies and supporting algorithms and software. This project has the only identified solution capable of meeting a time sensitive mission critical technology gap. The increase from FY 2015 to FY 2016 reflects the continuing increased investment in the development and integration of high-priority find, characterize and assess sensor technologies and supporting algorithms and software.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Title: RT: Target Assessment Technologies	47.478	53.850	56.065
Description: Project RT provides the COCOMs and the IC with technologies and processes to find and characterize WMD targets and HDBTs and then assess the results of attacks against those targets.			
FY 2014 Accomplishments: - Demonstrated Denied Area Persistent Sensor System enhanced detection/discrimination capability. - Developed a chemical/biological virtual laboratory model for support of foreign weapons program analysis. - Collected data and then developed an initial evaporative cooling analytical validation and verification model for support of the Underground Targeting and Analysis System thermal analysis capability. - Demonstrated an initial thermal process model interface for the Underground Targeting and Analysis System (UTAS). - Provided target characterization training for the Underground Facility and WMD target defeat communities.			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RT / *Target Assessment Technologies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
- Completed requirements analysis, development and test plans, risk analysis and mitigation plans for prototype (Spiral 1) sensor development. - Developed initial detection algorithms for support of the prototype sensor development. - Developed and demonstrated breadboard version of the prototype sensor. ***FY 2015 Plans:*** - Deliver Find Characterize and Assess detection and characterization on-node data fusion algorithm improvements in support of near-real time target update capabilities. - Deliver Find Characterize and Assess UTAS tool suite interface improvement for near real time support of IC target characterization and assessment. - Develop Adversarial Route Analysis Tool with Global Expansion for support of counter-WMD intelligence analysis. - Develop Full Operational Capability (FOC) for UTAS thermal process modeling capability in support of IC target analysis. - Develop Find Characterize and Assess detection and characterization hardware and software to support near-real time target update capabilities. ***FY 2016 Plans:*** - Develop, and demonstrate Nuclear WMD Defeat Model for support of IC counter-WMD analysis and functional defeat targeting. - Develop and demonstrate Chemical–Biological Weapons Emerging Threats Model capability for support of IC counter-WMD analysis and course of action selection. - Demonstrate FOC for UTAS thermal process modeling capability for support of IC functional vulnerability analysis of hard or deeply buried WMD related targets. - Demonstrate sensor detection hardware and characterization software integration to support IC near-real time target characterization updates for time critical targeting of WMD related targets. - Conduct developmental demonstration and testing of Spiral 1 prototype sensor nodes in a realistic mission-representative environment. - Conduct Spiral 1 operational assessment of deployable sensor nodes in a realistic mission-representative environment with operational personnel in accordance with the designed concept of operations. - Deliver 24 Spiral 1 prototype deployable sensor units. - Develop new and enhanced (range/sensitivity) detection capabilities and enhanced delivery capabilities as Spiral 2 of the deployable sensor project. - Produce additional prototype sensor units for follow-on (Spiral 2) integration testing and algorithm validation.			
Accomplishments/Planned Programs Subtotals	47.478	53.850	56.065

Exhibit R-2A, RDT&E Project Justification: PB 2016 Defense Threat Reduction Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**Project (Number/Name)** RT / *Target Assessment Technologies*

C. Other Program Funding Summary ($ in Millions)

N/A

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 the Department of Defense (DoD) Services' Laboratories, Department of Energy National Laboratories, and specialized university laboratories. Mature analytical tool capabilities are transitioned to the IC through partnership with the Defense Intelligence Agency Defense Counterproliferation Program.

E. Performance Metrics

Improve capability of IC to physically and functionally characterize WMD related targets through successful incorporation of WMD systems and process characterization modeling and assessment capabilities into the Underground Targeting and assessment System analytical tool.
Improve Underground Targeting and Analysis System characterization capabilities by incorporating functionality to handle a broader range of WMD-related equipment.
Improve sensor-on-node data fusion capability for deployable ground sensors in order to reduce communications burden.
Improve DoD's ability to analyze adversary WMD development capability through new modeling and analysis tool capabilities.
Demonstrate a compact, low power integrated sensor-on-node seismic and acoustic system with an operating prototype for characterization of WMD related targets by the IC for support of CCMD targeting.
Deliver a virtual laboratory for chemical, biological, and radiological models as a framework to analyze adversary WMD capabilities.
Demonstrate a deployable, remote sensor capability in response to a documented emerging operational need.