Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Army											Date: March 2014	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604870A *I Nuclear Arms Control Monitoring Sensor Network*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	-	7.093	-	-	-	-	-	-	-	-	Continuing	Continuing
SE1: *Nact Sensor Engineering*	-	7.093	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

Note

Program being moved from Army to OSD DTRA in FY14.

A. Mission Description and Budget Item Justification

This project provided Research, Development, Testing & Evaluation (RDTE) to meet technology requirements in support of implementation, compliance, monitoring and inspection for existing and emerging nuclear arms control activities and dual use technology for missile defense integration activities. The project addressed requirements validated by the Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD AT&L). This project conformed to the administration's research and development priorities as related to Weapons of Mass Destruction (WMD) arms control and disarmament. Technical assessments were made to provide the basis for sound project development, evaluation of existing programs and provide the data required to make compliance judgments and support US policy, decision-makers and negotiating teams. Technology developments and system improvement projects were conducted to ensure that capabilities for monitoring systems were available when required.

Primary emphasis was on improved sensor capabilities and improved detection and assessment capabilities against a wide range of threat origins.

The program included development of equipment and procedures for data exchanges, inspections and monitoring capability and analysis. The technologies and procedures developed in the arms control technology program provided an invaluable source of information on equipment and procedures that is extensively used by US and international agencies. This project also supports the warfighting capability area of combating Weapons of Mass Destruction (WMD).

Effective 1 October 2013, the NACT Program formally transferred from USASMDC/ARSTRAT to the Defense Threat Reduction Agency for management and execution of all aspects of the program.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Army					Date: March 2014
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*		
B. Program Change Summary ($ in Millions)	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO**	**FY 2015 Total**
Previous President's Budget	7.922	-	-	-	-
Current President's Budget	7.093	-	-	-	-
Total Adjustments	-0.829	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.226	-			
• Other Adjustments 1	-0.603	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army			Date: March 2014
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	Project (Number/Name) SE1 / *Nact Sensor Engineering*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
SE1: *Nact Sensor Engineering*	-	7.093	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This project provided Research, Development, Testing & Evaluation (RDTE) to meet technology requirements in support of implementation, compliance, monitoring and inspection for existing and emerging nuclear arms control activities and dual use technology for missile defense integration activities. The project addressed requirements validated by the Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD AT&L). This project conformed to the administration's research and development priorities as related to Weapons of Mass Destruction (WMD) arms control and disarmament. Technical assessments were made to provide the basis for sound project development, evaluation of existing programs and provide the data required to make compliance judgments and support US policy, decision-makers and negotiating teams. Technology developments and system improvement projects were conducted to ensure that capabilities for monitoring systems were available when required.

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Effective 1 October 2013, the NACT Program formally transferred from USASMDC/ARSTRAT to the Defense Threat Reduction Agency for management and execution of all aspects of the program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Support OSD Treaty Manager	0.597	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort			
FY 2013 Accomplishments: Supported joint U.S. / PTS technology conferences / exchanges (i.e. Workshop on Medical Isotope Production (WOSMIP) IV, PTS / U.S. Technology Working Group 5th Annual Conference; U.S. / Great Britain technology / operations interchange meetings). WOSMIP focused on d understanding the processes involved with isotope production to more capably account for backgrounds observed in International Monitoring Systems (IMS) stations. Provided technical and operational support for the			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
PTS/U.S. sponsored monitoring technology developments, standard reliability and operations / maintenance profile conference. Prepared / Supported DASD (TRAC) IMS technology overview briefings in preparation for interagency meetings.			
Title: Prototype Sensor Development	1.343	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Transitioned sensor and array calibration development efforts to DTRA. Sensor stability and uniformity is required for optimal array performance. Techniques, facilities, and equipment to calibrate sensors and arrays under laboratory conditions and in the field are being developed. Higher-performance, more stable and uniform sensors are being developed. Continue station calibration & metrology planning. The array calibration work focus' on in-situ array calibration systems and array performance measurements. Planned and carried-out signal capture & identification efforts to include signal clutter source studies, noise source studies, participated in exercises to collect field source data, develop field clutter rejection methodology / algorithms, and False Alarm Rejection Methodology. Completed planning to evaluate options for performing an experiment to evaluate measurement performance of IMS stations from a planned underground or under water detonation. The explosion will be non-nuclear in nature and will be configured to include the release of radioactive noble gasses in concentrations acceptable to environmental regulations and of a nature suitable to challenge IMS measurement technology.			
Title: Radionuclide Particulate / Xenon Gas Sensor System Development	0.416	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Transitioned Xenon gas systems research. Study and evaluate Xenon backgrounds & transport - Xenon categorization, data analysis & interpretation & Xenon transport from underground/underwater. Implemented a study of past detection schemes and compared current and future detections options with a focus on best pathways to improve sensitivity, selectivity (radon daughters vs. fission products), and reliability. Completed efforts to improve data quality and confidence in measurement data through development of high accuracy SAUNA gas calibration procedures and improvements to RASA filter splitting & handling.			
Title: Information Management Systems Enhancements	1.365	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
FY 2013 Accomplishments: Transitioned Infrasound propagation models development for purposes to improve detection, identification, and location of sources of interest. Conducted field experiments to collect data to constrain and refine models. To make contact with the data, models will include fine-scale atmospheric conditions, topography, 3D winds and effects of non-linear propagation. Completed development of plans for a portable / rapid deployable infrasound array and standard sound source for calibrating Infrasound stations / arrays. Conducted extensive testing and validation of propagation models.			
Title: Continue Research & Development support system	0.851	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Aging of the original RASA components, along with uptime/sustainment challenges (e.g., cooler failures) indicates the necessity to upgrade subsystems in the RASA. Increasing manufacturer obsolescence of many components has created a challenge to operations. Concentrated on RASA drawing package. Conducted RASA performance and design study. Based on those results, plans are to collect and prioritize requirements from Station Operators and design-build-test highest priority upgrades. Focus areas are nuclear detector (including cooling); filtration medium and sample head; and electronic controls. Supported the sustainment of Fielded IMS Systems. Analyzed alternate cooling options for RASA particulate systems, focused on development of system component upgrades, and maintained software updates/sustainment activities.			
Title: Continue U.S. IMS Sensor Event Signal Identification Technique Development	1.218	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Operated the TXL and SAUNA systems in advance of deployment. Operations and maintenance performed in advance of the TXL/SAUNA foreign deployment established an operations baseline for the SAUNA and provided additional opportunity to diagnose and resolve any remaining operational concerns. The operational mobile noble gas labs deployed to Japan and Indonesia completed their data gathering mission and delivered that to the customer. Evaluated the memory effect that occur when highly polarizable Xenon atoms attach to surfaces used in beta-gamma detection systems, or diffuse into the plastic cell wall. Conducted infrasound event signal clutter, false alarms and noise mitigation analysis (U.S. Array studies; catalogue persistent sources; noise studies; wind noise physics; false alarm rejection). Large numbers of spurious detections and high			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
noise levels at IMS stations can make data unusable. Noise reduction technologies, both algorithmic and mechanical, are being developed. Algorithms for the reduction of false positives will be investigated. Metrics for data usability will be developed.			
Title: Continue "On-Location" Infrasound Event Calibration Research	0.542	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Planned for Sayarim experiments and test at the Utah Test and Training Range (UTTR). Data collected and analyzed was utilized in propagation models improve and provide a fuller accounting of phenomenology. Conducted planning and development of the EDTC. The test beds will be utilized for research, testing and evaluations relevant to station shut downs; configuration changes; and invasive procedures. These test beds will allow for evaluation of R&D primary array developments of new technologies and their associated field testing.			
Title: Continue U.S. IMS Radionuclide Detection & Measurement Development	0.761	-	-
Articles:	-	-	-
Description: Funding is provided for the following effort ***FY 2013 Accomplishments:*** Transitioned Xenon gas systems research to DTRA. Evaluated gas yield and detection limits. PTS requirements indicate that the RL-16 gas system requires additional capability to meet the requirements. Develop test methods to increase yield and to improve detection efficiency. The processing train will be updated to improve transfer efficiency and to reduce dead volumes. To assure the RL-16 gas system is making a high precision measurement, the samples will be sent to a certified laboratory for part of the calibration. Current IMS operations of SAUNA radioxenon detection systems indicate the need for more robust and repeatable calibrations, ability to replace aging radiation detectors with more reliable, more flexible units, and a real-time state of health monitoring system to assist in improving data availability. Directed research will allow for timely and effective solutions to address these lessons learned and improve operational quality. Development of a robust, high precision method to calibrate the nuclear detectors effectively will be pursued. Task will develop the calibration methods to obtain the absolute calibration of the nuclear detector.			
Accomplishments/Planned Programs Subtotals	7.093	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Army			Date: March 2014
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	Project (Number/Name) SE1 / *Nact Sensor Engineering*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SMDC Support	SS/CPFF	Various : Various	2.932	0.597		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	2.932	0.597		-		-		-		-	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development Program	SS/CPFF	UM, MS, PNNL, WA : Various	23.740	4.589		-		-		-		-	-	28.329	-
		Subtotal	23.740	4.589		-		-		-		-	-	28.329	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SMDC Support	SS/CPFF	SMDC : AL, DC	7.158	1.365		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	7.158	1.365		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	SS/CPFF	Various : Various	2.599	0.542		-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	2.599	0.542		-		-		-		-	-	-	-

	Prior Years	FY 2013 Cost	FY 2013 Award Date	FY 2014 Cost	FY 2014 Award Date	FY 2015 Base Cost	FY 2015 Base Award Date	FY 2015 OCO Cost	FY 2015 OCO Award Date	FY 2015 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	36.429	7.093		-		-		-		-	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

	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
NACT Technology Development																												

Exhibit R-4A, RDT&E Schedule Details: PB 2015 Army		Date: March 2014
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604870A / *Nuclear Arms Control Monitoring Sensor Network*	**Project (Number/Name)** SE1 / *Nact Sensor Engineering*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NACT Technology Development	1	2007	4	2013