Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Army										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604870A: *Nuclear Arms Control Monitoring Sensor Network*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	6.860	7.276	7.398	-	7.398	7.837	7.874	7.871	7.964	Continuing	Continuing
SE1: *NACT SENSOR ENGINEERING*	6.860	7.276	7.398	-	7.398	7.837	7.874	7.871	7.964	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides 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 addresses requirements validated by the Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD AT&L). This project conforms to the administration's research and development priorities as related to Weapons of Mass Destruction (WMD) arms control and disarmament. Technical assessments are made to provide the basis for sound project development, evaluate 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 are conducted to ensure that capabilities for monitoring systems are available when required.

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

The program includes 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 provide 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).

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	7.103	7.276	7.424	-	7.424
Current President's Budget	6.860	7.276	7.398	-	7.398
Total Adjustments	-0.243	-	-0.026	-	-0.026
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.243	-			
• Adjustments to Budget Years	-	-	-0.026	-	-0.026

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
SE1: *NACT SENSOR ENGINEERING*	6.860	7.276	7.398	-	7.398	7.837	7.874	7.871	7.964	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project provides 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 addresses requirements validated by the Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD AT&L). This project conforms to the administration's research and development priorities as related to Weapons of Mass Destruction (WMD) arms control and disarmament. Technical assessments are made to provide the basis for sound project development, evaluate 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 are conducted to ensure that capabilities for monitoring systems are available when required.

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

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Support OSD Treaty Manager	0.304	0.476	0.573
Articles:	0	0	
Description: .			
FY 2010 Accomplishments: Sponsored cooperative PTS / US international technical exchange meetings defining the next generation monitoring system technical and operational performance and reliability requirements (i.e. station data encryption, surety, command and control, reliability). Conducted NACT Radionuclide and Infrasound technology working groups / technology planning and review meetings. Provided PTS Working Group B U.S. delegation technical and programmatic support. Established / conducted / sponsored NACT program biweekly IPT meetings			
FY 2011 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Plan / Support joint US / PTS technology conferences / exchanges (i.e. Workshop on Medical Isotope Production (WOSMIP) II, PTS / US Technology Working Group 2nd Annual Conference; PTS PKI / Command & Control experiment; US / Great Britain technology / operations interchange meetings). Provide technical and operational support for the PTS / US sponsored monitoring technology developments, standard reliability and operations /maintenance profile conference. Prepare / Support IMS technology overview briefings (OSD ASD Nuclear, Chemical, Biological Program) in preparation for inter agency meetings. ***FY 2012 Plans:*** Plan / Support joint US / PTS technology conferences / exchanges (i.e. Workshop on Medical Isotope Production (WOSMIP) II, PTS / US Technology Working Group 2nd Annual Conference; PTS PKI / Command & Control experiment; US / Great Britain technology / operations interchange meetings). Provide technical and operational support for the PTS / US sponsored monitoring technology developments, standard reliability and operations /maintenance profile conference. Prepare / Support IMS technology overview briefings (OSD ASD Nuclear, Chemical, Biological Program) in preparation for inter agency meetings.			
Title: Prototype Sensor Development	1.300	1.400	1.445
Articles:	0	0	
Description: . ***FY 2010 Accomplishments:*** Manufactured / deployed (i.e. US Seismic Array Project, the Israeli Sayarim infrasound experiment; UTTR) over 100 prototype infrasound next generation sensors for extensive and reliability and dynamic range performance / validation testing in support of the infrasound data collection; event identification; source location and signal analysis. CTBT performance requirements, acceptance testing at the Sandia National Laboratory. ***FY 2011 Plans:*** Deploy next generation sensors for field and operational testing within the PTS Sayarim Infrasound Experiment. Deploy next generation sensors for dynamic operational performance testing at the UTTR ordinance disposal site. Deploy next generation sensors to the PTS Conrad Site for dynamic performance testing against CTBT acceptance requirements ***FY 2012 Plans:*** Deploy next generation sensors for field and operational testing within the PTS Sayarim Infrasound Experiment. Deploy next generation sensors for dynamic operational performance testing at the UTTR ordinance disposal site. Deploy next generation sensors to the PTS Conrad Site for dynamic performance testing against CTBT acceptance requirements			
Title: Radionuclide Particulate / Xenon Gas Sensor System Development	0.400	0.400	0.397
Articles:	0	0	

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Description: . ***FY 2010 Accomplishments:*** Defined / procured / deployed radionuclide particulate system detector / cryogenic cooler replacement system for extensive field operational and performance validation testing. Initiated joint U.S. / PTS radionuclide particulate system detector / cryogenic cooler replacement system testing and performance validation program. Completed field portable Xenon gas detection system ***FY 2011 Plans:*** Deploy and field test the field portable Xenon gas system within the EU project for Global Xenon background characterization. Complete acceptance / operational performance testing and deploy the next generation particulate system's detector / cryogenic cooler replacement system. Continue developing single-isotope xenon calibration standards production methods (i.e. Xenon detection system calibration standards). Define Xenon gas detection analysis and characterization algorithms ***FY 2012 Plans:*** Deploy and field test the field portable Xenon gas system within the EU project for Global Xenon background characterization. Complete acceptance / operational performance testing and deploy the next generation particulate system's detector / cryogenic cooler replacement system. Continue developing single-isotope xenon calibration standards production methods (i.e. Xenon detection system calibration standards). Define Xenon gas detection analysis and characterization algorithms			
Title: Information Management Systems Enhancements ***Articles:*** ***Description:*** . ***FY 2010 Accomplishments:*** Implemented U.S. IMS stations' system engineering and reliability analysis pilot project. Conducted joint US / IMS engineering monitoring systems configuration management system audit within the Database of the Technical Secretariat (DOTS) architecture. Implemented the U.S. IMS Stations SOH monitoring system under a joint USASMDC NACT / AFTAC imitative at the U.S. NDC. Implemented PTS IMS SOH GUI and Performance Reporting Tool (PRTool) (i.e. data availability, GCI and stations' performance monitoring) tools across the NACT Program ***FY 2011 Plans:*** Implement extended infrasound propagation models (i.e. include NRL's ***FY 2012 Plans:*** Implement extended infrasound propagation models (i.e. include NRL's	1.356 0	1.500 0	1.496
Title: Continue R&D support system	0.900	0.900	0.897

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Articles:	0	0	
Description: . ***FY 2010 Accomplishments:*** Developed / tested infrasound event signal clutter, false alarms and noise rejection techniques (i.e. ***FY 2011 Plans:*** Continue radionuclide technology development projects focused on: improving International Monitoring System (IMS) xenon samplers' detection systems, improved information on the background levels of fission products in the atmosphere, and technology to decrease the effluent from medical isotope production plants that cause large backgrounds of radionuclides for IMS samplers. Continue waveform (infrasound / seismic) development program focused on sensor / station calibration and metrology, on sensor development and on data collection and analysis. ***FY 2012 Plans:*** Continue radionuclide technology development projects focused on: improving International Monitoring System (IMS) xenon samplers' detection systems, improved information on the background levels of fission products in the atmosphere, and technology to decrease the effluent from medical isotope production plants that cause large backgrounds of radionuclides for IMS samplers. Continue waveform (infrasound / seismic) development program focused on sensor / station calibration and metrology, on sensor development and on data collection and analysis.			
Title: Continue "On-Location" Infrasound Event Calibration Research	0.500	0.500	0.497
Articles:	0	0	
Description: . ***FY 2010 Accomplishments:*** Calibration and Metrology Development (deployed / field tested portable sensor / array during Sayarim and UTTR; tested and validated infrasound In situ calibration process at I53, I10 and I56). Implemented / successfully demonstrated the US developed infrasound array ***FY 2011 Plans:*** Continue calibration and metrology research and development at established test beds (EDTC) (O&M-primary test bed (SNL); R&D-primary test bed (PSU); SOH metrics (UAF, PSU, UM); data quality). Deploy / implement the US developed infrasound array ***FY 2012 Plans:***			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continue calibration and metrology research and development at established test beds (EDTC) (O&M-primary test bed (SNL); R&D-primary test bed (PSU); SOH metrics (UAF, PSU, UM); data quality). Deploy / implement the US developed infrasound array			
Title: Continue U.S. IMS Sensor Event Signal Identification Technique Development	1.300	1.300	1.296
Articles:	0	0	
Description: . ***FY 2010 Accomplishments:*** Implemented the in-situ calibration method at the PTS Conrad test facility (Vienna). Initiated infrasound propagation models development (i.e. time domain model; blast propagation; repository built; transitioning existing codes; G2S atmospheric specifications). Formed extended propagation modeling team (UM , NRL) ***FY 2011 Plans:*** Plan / support / participate in the Israeli wintertime Sayarim infrasound experiment. Implement / validate the enhanced infrasound propagation models (Sayarim; UTTR). Deploy next generation infrasound sensor at UTTR (data collection; source location; event analysis; performance, validation, reliability testing). Continue clutter, false alarms and noise mitigation analysis (USArray studies; catalogue persistent sources; noise studies; wind noise physics; false alarm rejection). Continue CEA / DASE collaboration (test against US and European network) ***FY 2012 Plans:*** Plan / support / participate in the Israeli wintertime Sayarim infrasound experiment. Implement / validate the enhanced infrasound propagation models (Sayarim; UTTR). Deploy next generation infrasound sensor at UTTR (data collection; source location; event analysis; performance, validation, reliability testing). Continue clutter, false alarms and noise mitigation analysis (USArray studies; catalogue persistent sources; noise studies; wind noise physics; false alarm rejection). Continue CEA / DASE collaboration (test against US and European network)			
Title: Continue U.S. IMS Radionuclide Detection & Measurement Development	0.800	0.800	0.797
Articles:	0	0	
Description: . ***FY 2010 Accomplishments:*** US (PNNL) / PTS / Argentine Nuclear Regulatory Authority (ANR) program team indentified measurement sites / logistical plans for the International Xenon Inventory Measurements (IXIM) project The PNNL staff identified and met with local logistics companies to receive (seaport) and transport the TXL containerized measurement system to the location(s) in Argentina. Completed initial RL-16 laboratory gas analysis system performance and validation testing for use as a secondary, laboratory-			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
based radioxenon spectrometer. Completed two test sets (PTS provided samples; PNNL SAUNA generated samples). The PTS samples were generated by University of Texas (UT). ***FY 2011 Plans:*** Continue advanced xenon separation modeling and simulation methods development for next generation Xenon detection and monitoring systems (i.e. life cycle and obsolescence management planning). Deploy Transportable Xenon Laboratory (TXL) to the Argentina for the International Xenon Inventory Measurements (IXIM) campaign (Q4CY10). Continue RL-16 laboratory gas analysis system performance and validation testing for use as a secondary, laboratory-based radioxenon spectrometer. Continue evaluating detector ***FY 2012 Plans:*** Continue advanced xenon separation modeling and simulation methods development for next generation Xenon detection and monitoring systems (i.e. life cycle and obsolescence management planning). Deploy Transportable Xenon Laboratory (TXL) to the Argentina for the International Xenon Inventory Measurements (IXIM) campaign (Q4CY10). Continue RL-16 laboratory gas analysis system performance and validation testing for use as a secondary, laboratory-based radioxenon spectrometer. Continue evaluating detector			
Accomplishments/Planned Programs Subtotals	6.860	7.276	7.398

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not applicable for this item.

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army			DATE: February 2011
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SMDC Support	SS/CPFF	Various:Various	1.500	0.500		0.496		-		0.496	Continuing	Continuing	Continuing
		Subtotal	1.500	0.500		0.496		-		0.496			

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	Various	Various:MS, VA	6.431	2.562		2.744		-		2.744	Continuing	Continuing	Continuing
		Subtotal	6.431	2.562		2.744		-		2.744			

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Monitoring Sensor Systems, Program Data Analysis, Verification Systems Concept Demo	SS/CPFF	SAIC, General Dynamics:VA	5.815	1.600		1.594		-		1.594	Continuing	Continuing	Continuing
Support Contracts & Government Support	Various	Various:FL, NM, VA, AL	3.307	1.100		1.096		-		1.096	Continuing	Continuing	Continuing
SMDC Support	SS/CPFF	SMDC:AL, DC	2.200	1.200		1.196		-		1.196	Continuing	Continuing	Continuing
		Subtotal	11.322	3.900		3.886		-		3.886			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	SS/CPFF	Various:Various	1.107	0.314		0.272		-		0.272	Continuing	Continuing	Continuing
		Subtotal	1.107	0.314		0.272		-		0.272			

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	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	20.360	7.276		7.398		-		7.398			

Remarks