Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	10.555	4.869	4.465	-	4.465	4.490	3.968	3.889	3.945	Continuing	Continuing
552: *SMOKE/NOVEL EFFECT MUN*	5.154	4.869	4.465	-	4.465	4.490	3.968	3.889	3.945	Continuing	Continuing
BA1: *Protection Technologies (CA)*	5.401	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

FY11 funding increased for Congressional Add.

A. Mission Description and Budget Item Justification

This program element (PE) investigates and evaluates obscurant technologies to increase personnel and platform survivability and develop and validate forensic analysis methods for military and homemade explosive devices, including their precursors and residue. Project 552 pursues research in materials science as well as dissemination methodologies, mechanisms, technologies, and techniques to enable forensic analysis of explosive signatures.

Work in this PE is related to, and fully coordinated with, PE 0603004A, project L97 (Smoke and Obscurants Advanced Technology) and PE 0603606A, project 608 (Countermine & Barrier Development).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

This work is performed by the Army Research, Development, and Engineering Command (RDECOM), Edgewood Chemical Biological Center (ECBC), Edgewood, MD.

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army					DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*		R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*			
B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	5.324	4.877	4.431	-	4.431
Current President's Budget	10.555	4.869	4.465	-	4.465
Total Adjustments	5.231	-0.008	0.034	-	0.034
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	5.520	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.289	-			
• Adjustments to Budget Years	-	-	0.034	-	0.034
• Other Adjustments 1	-	-0.008	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*	PROJECT 552: *SMOKE/NOVEL EFFECT MUN*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
552: *SMOKE/NOVEL EFFECT MUN*	5.154	4.869	4.465	-	4.465	4.490	3.968	3.889	3.945	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project investigates and evaluates obscurant technologies that degrade threat force surveillance sensors and defeat the enemy's target acquisition devices, missile guidance, and directed energy weapons. This project focuses on advanced infra-red (IR) and multi-spectral obscurant materials that provide effective, affordable, and efficient screening of deployed forces, while being safe and environmentally acceptable. Additionally, it researches and investigates forensic analysis technology in explosives and explosives-related chemical signatures, and develops and validates field sampling and forensics methods for use in a forward-deployed laboratory.

This project sustains Army science and technology efforts supporting the Ground portfolio.

Work in this PE is related to, and fully coordinated with, PE 0603004A/project L97 (Smoke and Obscurants Advanced Technology) and PE 0603606A/project 608 (Countermine & Barrier Development).

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the Army Research, Development, and Engineering Command (RDECOM), Edgewood Chemical Biological Center (ECBC), Edgewood, MD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Advanced Obscurants	1.355	1.398	1.411
Description: This effort investigates new materials and compounds to enable safe, effective screening of personnel and equipment.			
FY 2011 Accomplishments: Developed, refined and optimized bi-spectral packaging and dissemination concepts through testing and modifications to make them suitable for weaponization.			
FY 2012 Plans: Evaluate optimized bispectral materials and initiate analysis of spectrally selective obscurant concepts.			
FY 2013 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*	PROJECT 552: *SMOKE/NOVEL EFFECT MUN*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Will begin small scale synthesis of spectrally selective materials and conduct characterization.			
Title: Obscurant Enabling Technology ***Description:*** This effort investigates distribution technologies for various obscurants. ***FY 2011 Accomplishments:*** Conducted studies of dissemination techniques for low hazard visual obscurants to increase their obscuration performance and to make them suitable for weaponization. ***FY 2012 Plans:*** Refine and optimize new visual low hazard obscurants. ***FY 2013 Plans:*** Will conduct dissemination studies of new low hazard visual obscurants.	0.875	0.968	1.056
Title: Detection of Unknown Bulk Explosives ***Description:*** This effort develops an understanding of signatures required to provide improved point, proximity, and stand-off detection of explosives and precursor materials. Will transition technologies to PE (0603004A/Project L97 (Smoke and Obscurants Advanced Technology). ***FY 2011 Accomplishments:*** Established and validated forensic sampling protocols for sensing explosives on surfaces; identified the differences in instrumentation used in theater and within continental United States-based laboratories; continued fate and transport studies of trace energetics and chemical components focusing on surface residues; evaluate and determine decomposition patterns and pathways to provide additional signature markers; identified chemical signatures for sensing, leveraging data from DARPA Portable Open Source Security Elements (POSSE) program; investigated the ability to combine chemical and explosive hazard detection; and utilized findings to help guide detector/detection specifications. ***FY 2012 Plans:*** Investigate improved signature information and novel algorithms and experimentally evaluate performance for explosives and precursor materials in existing chemical point and stand-off detection sensor systems.	2.924	2.503	-
Title: Forensic Analysis of Explosives ***Description:*** This effort investigates forensics analytical methods for military explosives, homemade explosives (HME), HME precursors, and residue analysis for attribution. ***FY 2013 Plans:***	-	-	1.998

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*	PROJECT 552: *SMOKE/NOVEL EFFECT MUN*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Will develop analytical and forensic protocols for homemade explosive threats in order to expand and enhance capabilities at Tier II theater analytical laboratories (mobile and semi permanent); and demonstrate integrated biometric and chemical sensing for attribution using Raman chemical imaging.			
Accomplishments/Planned Programs Subtotals	5.154	4.869	4.465

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

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-2A, RDT&E Project Justification: PB 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602622A: *Chemical, Smoke and Equipment Defeating Technology*	PROJECT BA1: *Protection Technologies (CA)*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
BA1: *Protection Technologies (CA)*	5.401	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Protection Technologies applied research.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Emerging Chemical Agent Threat	5.401	-	-
Description: This is a Congressional Interest Item			
FY 2011 Accomplishments: This is a Congressional Interest Item			
Accomplishments/Planned Programs Subtotals	5.401	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

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.