Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army											Date: February 2015	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*					R-1 Program Element (Number/Name) PE 0602622A *I Chemical, Smoke and Equipment Defeating Technology*							
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	-	4.378	3.970	3.866	-	3.866	3.923	3.994	4.018	4.098	-	-
552: *Smoke/Novel Effect Mun*	-	4.378	3.970	3.866	-	3.866	3.923	3.994	4.018	4.098	-	-

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.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	4.487	3.971	3.894	-	3.894
Current President's Budget	4.378	3.970	3.866	-	3.866
Total Adjustments	-0.109	-0.001	-0.028	-	-0.028
• Congressional General Reductions	-	-0.001			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.109	-			
• Adjustments to Budget Years	-	-	-0.028	-	-0.028

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602622A / *Chemical, Smoke and Equipment Defeating Technology*	Project (Number/Name) 552 / *Smoke/Novel Effect Mun*	

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
552: *Smoke/Novel Effect Mun*	-	4.378	3.970	3.866	-	3.866	3.923	3.994	4.018	4.098	-	-

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 Maneuver 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 2014	FY 2015	FY 2016
Title: Advanced Obscurants	1.438	1.504	1.426
Description: This effort investigates new materials and compounds to enable safe, effective screening of personnel and equipment.			
FY 2014 Accomplishments: Investigated spectrally selective obscuration concepts to provide Warfighter with a new one-way smoke capability; investigated microwave obscurant formulations to defeat future electronic warfare (EW) threats.			
FY 2015 Plans: Continue to investigate spectrally selective materials and new microwave obscurant materials.			
FY 2016 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602622A / *Chemical, Smoke and Equipment Defeating Technology*	**Project (Number/Name)** 552 / *Smoke/Novel Effect Mun*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Will continue to investigate spectrally selective materials and new microwave materials. Investigate materials for advanced bispectral obscurants.			
Title: Obscurant Enabling Technology ***Description:*** This effort investigates distribution technologies for various obscurants. ***FY 2014 Accomplishments:*** Continued dissemination studies of new low hazard visual obscurants for grenade applications; conducted novel modeling analysis of new low hazard obscurants for mortar/artillery applications dissemination studies. ***FY 2015 Plans:*** Continue to study dissemination of new low hazard visual obscurants for grenade applications. Will initiate explosive dissemination technology studies. Will initiate efforts to investigate vulnerability of various technologies to obscurant/target defeat effects. Will identify technologies of interest; conduct initial analysis with the intent of evaluating/assessing effects. ***FY 2016 Plans:*** Will continue to study explosive dissemination variables to understand key factors such as obscurant dispersal. Will continue to conduct vulnerability studies of various technologies to obscurant/target defeat effects.	1.000	1.000	1.000
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 2014 Accomplishments:*** Developed analytical methods for forensic analysis of explosives with the objective of assigning attribution to include collection, preparation, instrumental analysis and advanced statistical techniques; provided solutions for analytical problems encountered by expeditionary laboratories, particularly for the analysis of explosives (Toxic Industrial Compounds (TICs), and Materials(TIMs), agricultural chemicals and emerging needs and threats) in a variety of sample matrices. ***FY 2015 Plans:*** Investigate linkages of spectroscopic signatures developed in FY12 with compositional analysis of explosives using analytical protocols developed in FY13-14 in order to improve the attribution power of optical systems. ***FY 2016 Plans:***	1.940	1.466	1.440

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602622A / *Chemical, Smoke and Equipment Defeating Technology*	**Project (Number/Name)** 552 / *Smoke/Novel Effect Mun*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016
Will investigate the combination of microfluidics and surface enhance Raman spectroscopy (SERS) for the detection of explosives, drugs, and other molecules of interest for forensic analysis in biological fluids such as saliva, sweat and urine.			
Accomplishments/Planned Programs Subtotals	4.378	3.970	3.866

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A