ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE
2 - Applied Research	**0602622A - Chemical, Smoke and Equipment Defeating Technology**

	COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
	Total Program Element (PE) Cost	3840	6529	3675	3940	3904	4461	4605
552	SMOKE/NOVEL EFFECT MUN	3840	3529	3675	3940	3904	4461	4605
BA1	BIOTECHNOLOGY	0	2000	0	0	0	0	0
CA1	THERMOBARIC WARHEAD DEVELOPMENT	0	1000	0	0	0	0	0

A. Mission Description and Budget Item Justification: The goal of this Program Element (PE) is to increase personnel and platform survivability by researching and investigating enhanced smoke and obscurant technologies. The PE funds applied research in materials science and dissemination technologies to counter enemy weapon target acquisition systems and to provide the ability to degrade enemy surveillance capability. Improved multispectral obscurant materials are sought that will enhance survivability by providing effective, affordable, and efficient screening of deployed forces from threat force surveillance sensors and effective defeat of target acquisition devices, missile guidance, and directed energy weapons. The material and dissemination systems will be designed to be safe and environmentally acceptable. Efforts under this PE transition to Program Definition and Risk Reduction (PDRR), and System Development & Demonstration (SDD) programs. Work in this PE is consistent with the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and Project Reliance. This PE contains no duplication with any effort within the Military Departments. This work is performed by the U.S. Army Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD. This work supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	3497	3561	3589
Appropriated Value	3530	6561	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-32	0
b. SBIR / STTR	-77	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	420	0	0
e. Rescissions	-33	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	86
Current Budget Submit (FY 2003 PB)	3840	6529	3675

Change Summary Explanation:

Significant Change: FY02 congressional adds totaling $3M (as noted below) were added to this program element.

FY02 - Congressional adds were made for Thermobaric Warhead Development, Project CA1 ($1000); and Biotechnology, Project BA1 ($2000).

No R-2A required:
- ($1000) Thermobaric Warhead Development, Project CA1: The objective of this one year Congressional add is to evaluate blast and thermal effects of prototype thermobaric munitions. No additional funding is required to complete this project.
- ($2000) Biotechnology, Project BA1: The objective of this one year Congressional add is to support basic and applied research in emerging biotechnology areas with high potential for future Army applications. No additional funding is required to complete this project.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602622A - Chemical, Smoke and Equipment Defeating Technology**	**552**

COST (In Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate
552	SMOKE/NOVEL EFFECT MUN	3840	3529	3675	3940	3904	4461	4605

A. Mission Description and Budget Item Justification: Project 552 researches and investigates smoke and obscurant technologies to increase personnel/platform survivability and to provide the ability to degrade enemy surveillance sensor capability. Improved multi-spectral smokes/obscurants are explored to enhance survivability by providing effective, affordable, and efficient screening of deployed forces from threat force surveillance sensors and effective defeat of target acquisition devices, missile guidance, and directed energy weapons. These systems will be designed to be safe and environmentally acceptable. Modeling and simulation will be investigated to predict performance and analyze strategic use of obscurants on the battlefield. This program supports the Objective Force transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

- 2000 - Researched advanced Infrared (IR) obscurants for potential use in IR smoke pots and IR projected munitions, capabilities that the Army does not have currently. The goal is to achieve 4 times the extinction performance of current materials in order to meet performance, logistics, and affordability criteria for the obscurant applications.

  - Researched particle characteristics for optimal IR obscurant performance utilizing theoretical models; solicited Materials Science solutions from industry for IR obscurants; developed a cooperative work plan that includes foreign emissive and pyrotechnic IR and multi-spectral concepts as part of an International Task Force on Obscurants.

- 1840 - Evaluated obscurant concepts for Distant Smoke System.

  - Evaluated IR propellant dissemination in smoke pot configuration. Investigated additional smoke pot dissemination techniques.

  - Investigated smoke simulation in Combined Arms Tactical Trainer and OneSAF models. Conducted case study in maneuver operations and initiated one case study in urban operations.

  - Investigated novel propellant dissemination technology to provide enhanced vehicle obscuration protection in support of FCS.

  - Analyzed data and documented results of initial prototype field evaluations of the cloud characteristics produced from obscurant propellant dissemination technologies.

Total 3840

FY 2002 Planned Program

- 2000 -Continue investigation of advanced IR obscurants leading to improved performance for use in IR smoke pots and projected munitions. Continue to solicit new IR materials from industry and academia. Identify defeat mechanisms of IR sensors. Develop new laboratory/chamber measurement techniques.

- 1529 - Continue development of Distant Smoke System in preparation for demonstration in FY03.
  - Assess performance of promising smoke pot configurations.
  - Continue to investigate and upgrade simulation tools to evaluate Smoke/Obscurant systems in urban environment.
  - Continue to investigate technology to provide enhanced vehicle obscuration protection in support of FCS.

Total 3529

FY 2003 Planned Program

- 2100 - Investigate laboratory dissemination techniques for new advanced IR obscurants; evaluate promising candidate IR obscurants. Prepare to transition results for FCS application.
- 1575 - Conduct Distant Smoke System demonstration. Transition technology to Program Development/Risk Reduction.
  - Incorporate IR obscurants into Smoke Pot configuration.
  - Conduct modeling and simulation case studies to predict and analyze performance of Distant Smoke, Smoke Pot, and other obscurant technologies.
  - Perform field experiments to provide enhanced vehicle obscuration protection in support of FCS.

Total 3675