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

**June 2001**

BUDGET ACTIVITY
**2 - APPLIED RESEARCH**

PE NUMBER AND TITLE
**0602622A - Chemical, Smoke and Equipment Defeating Tech**

| COST (In Thousands) | FY 2000 Actual | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Program Element (PE) Cost | 4542 | 3497 | 3561 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 552 SMOKE/NOVEL EFFECT MUN | 3587 | 3497 | 3561 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 556 OPTICAL SPECTROSCOPY | 955 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**A. Mission Description and Budget Item Justification:**

**PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.**

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, all of which can operate from the visible through the microwave portion of the electromagnetic spectrum. 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 2000 | FY 2001 | FY 2002 | FY 2003 |
|---|---|---|---|---|
| Previous President's Budget (FY2001 PB) | 4953 | 3530 | 3550 | 0 |
| Appropriated Value | 4996 | 3530 | 0 | |
| Adjustments to Appropriated Value | 0 | 0 | 0 | |
| a. Congressional General Reductions | 0 | 0 | 0 | |
| b. SBIR / STTR | -111 | 0 | 0 | |
| c. Omnibus or Other Above Threshold Reductions | -17 | 0 | 0 | |
| d. Below Threshold Reprogramming | -300 | 0 | 0 | |
| e. Rescissions | -26 | -33 | 0 | |
| Adjustments to Budget Years Since FY2001 PB | 0 | 0 | 11 | |
| Current Budget Submit (FY 2002/2003 PB ) | 4542 | 3497 | 3561 | 0 |

In FY00, a Congressional add was received for Optical Spectroscopy ($1000). This project evaluated soybean oil as a substitute for the current standard visible screening smoke material.

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

**June 2001**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **2 - APPLIED RESEARCH** | **0602622A - Chemical, Smoke and Equipment Defeating Tech** | **552** |

| COST (In Thousands) | FY 2000 Actual | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 552 SMOKE/NOVEL EFFECT MUN | 3587 | 3497 | 3561 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**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, all of which can operate from the visible through the microwave portion of the electromagnetic spectrum. 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 2000 Accomplishments**

- 1370 - Conducted in-depth field evaluations of the cloud characteristics produced from obscurant propellant dissemination technologies.
  - Applied propellant dissemination technologies to a smoke pot configuration. Conducted limited smoke pot field evaluations.
  - Conducted assessment of methodologies and requirements analysis for Smoke/Obscurant simulation infrastructure using One Semi Automated Forces (OneSAF) model.
  - Assessed delivery methods for the strategic placement of obscurants on the battlefield for Distant Smoke capabilities using modeling and simulation, along with a case study of smoke concepts.
- 2203 - Measured MilliMeter Wave (MMW) Module performance in field evaluation.
  - Transitioned the MMW Module to PM Obscurant and Decon Systems for Pre-Planned Product Improvement.

Total 3573

**FY 2001 Planned Program**

| | | |
|---|---|---|
| • | 2000 | - Research 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. |
| | | - Research particle characteristics for optimal IR obscurant performance utilizing theoretical models; solicit Materials Science solutions from industry for IR obscurants; investigate foreign emissive and pyrotechnic IR and multi-spectral concepts. |
| • | 1420 | - Down select obscurant technology for Distant Smoke System. Evaluate breadboard delivery systems. |
| | | - Evaluate IR propellant dissemination in smoke pot configuration. Investigate additional smoke pot dissemination techniques. |
| | | - Investigate smoke simulation in Combined Arms Tactical Trainer and OneSAF models. Conduct case studies in maneuver and urban operations. |
| | | - Investigate novel propellant dissemination technology to provide enhanced vehicle obscuration protection in support of FCS. |
| | | - Analyze data and document results of in-depth field evaluations of the cloud characteristics produced from obscurant propellant dissemination technologies. |
| • | 77 | - Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. |
| Total | 3497 | |

**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. Begin capitalization on foreign systems identified last year. |
| • | 1561 | - 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 novel propellant dissemination technology to provide enhanced vehicle obscuration protection in support of FCS. |
| Total | 3561 | |