# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

**February 2005**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **3 - Advanced technology development** | **0603103A - Explosive Demilitarization Technology** | **D51** |

| COST (In Thousands) | | FY 2004 Actual | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate |
|---|---|---|---|---|---|---|---|---|---|
| D51 | EXPLOSIVES DEMIL TECH | 24180 | 18405 | 9865 | 10241 | 10293 | 10508 | 10901 | 11118 |

**A. Mission Description and Budget Item Justification:** The Explosive Demilitarization Technology Program is a cooperative interservice, interagency effort dedicated to the maturation of safe, efficient and environmentally acceptable processes for the closed disposal of conventional munitions including explosives, missiles, missile components and large rocket motors. Efforts in this program emphasize environmentally compliant technologies to enhance existing methods for munitions resource recovery and recycling (R3) and treatment, and seek alternatives to open burning/open detonation (OB/OD). There are currently nearly 400,000 tons of conventional munitions requiring disposition with a forecast of 475,000 tons and over 275,000 missiles and missile components to flow through the stockpile by FY 2006-2010. The effort employs the highly matured technology base in the DoD Service Laboratories and Technical Centers, the Department of Energy (DOE) National Laboratories, industry, and academia. The program is integrated through the leadership of the Product Manager for Demilitarization and the Joint Ordnance Commanders Group Munitions Demilitarization/Disposal Subgroup leveraging support from the Department's Environmental Security Technology Certification Program (ESTCP), the Strategic Environmental Research and Development Program (SERDP), the Joint DOD/DOE Munitions Technology Program, and complementary Service science and technology programs. The Technology Directorate, Defense Ammunition Center, serves as the PM Demil's technical and programmatic support staff in this effort. The program supports the R&D Technology goals of the PM Demilitarization Strategic Plan which focuses on technology transfer opportunities. The program supports an annual Global Demilitarization Symposium for the technical review and data evaluation from ongoing projects and advanced demonstrations. The PM Demilitarization R&D IPT utilizes a systematic approach for project prioritization. The program element contains no duplication with any effort within the Military Departments. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP) and the Defense Technology Area Plan (DTAP).

| Accomplishments/Planned Program | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| Resource Recovery and Reuse (R3): In FY 04, continued development of explosives/propellant detection with Near-Infrared (NIR) Technology; developed sporting powder formulations; demonstrated Explosive D conversion to picric acid. In FY 05, increase NIR calibration library for propellants and perform field demonstration of NIR explosives detection unit; continue development of sporting powder formulations; optimize Explosive D conversion process; validate propellant conversion technology; design analysis of alternatives for missile demilitarization. In FY 06, will continue development of calibration curves for the NIR propellant scanner; complete demonstration/validation of NIR explosives detection unit; initiate conversion of gun propellant to small arms ammunition (SAA) propellant for military applications; validate Explosive D conversion process; design and fabricate propellant conversion technology for optimal throughput; initiate prototype design for missile demilitarization. In FY 07, will transition NIR explosive detection unit; continue development of SAA propellant formulations; transition Explosive D conversion process; initiate development of process for conversion of Explosive D to higher value products; demonstrate optimized propellant conversion technology; complete prototype design for missile demilitarization; and continue Joint Program integration. | 3520 | 5627 | 3700 | 4092 |
| Advanced Destruction: In FY04, demonstrated enhanced stationary contained detonation technology (CDT); modified transportable contained detonation unit; demonstrated transportability of confined burn technology. In FY 05, incorporate performance enhancements to the stationary CDT based on prior demonstrations; initiate demonstration of transportable CDT; test system operability of confined burn technology. In FY 06, will demonstrate/validate enhanced stationary CDT; continue demonstration of transportable CDT; demonstrate confined burn technology. In FY 07, will transition stationary CDT; validate and transition transportable CDT; and enhance feed system for confined burn technology. | 2280 | 728 | 1265 | 1000 |
| Waste Stream treatment: In FY 04, incorporated enhancements to the Super Critical Water Oxidation (SCWO) technology; conducted design evaluation of Molten Salt Oxidation (MSO) unit; designed and fabricated advanced decontamination capability. In FY 05, demonstrate enhanced SCWO technology; complete fabrication and initiate demonstration of MSO. In FY 06, will validate and transition SCWO technology; complete demonstration and continue advanced development of MSO for explosives. In FY 07 will conduct pilot demonstration of advanced MSO. | 1920 | 1553 | 4000 | 3000 |

| Accomplishments/Planned Program A(continued) | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| Advanced Munitions Disassembly: In FY04, continued efforts in the areas of robotic disassembly of projectiles; demonstrated and validated robotic disassembly work cells matured for the Artillery Delivered Anti-personnel Mine (ADAM) projectile. In FY05, transition robotic disassembly for the ADAM projectile; optimize water jet cutting parameters for medium caliber projectiles. In FY06, will complete demonstration/validation of robotic disassembly work cell for 8in RAP; design and fabricate waterjet prototype for medium caliber projectiles. In FY07, will transition robotic disassembly work cell for 8In RAP and initiate design for disassembly of 155mm RAP; complete fabrication and initiate demonstration/validation of waterjet prototype for medium caliber projectiles; and initiate advanced cutting for disassembly of CBUs/submunitions. | 660 | 717 | 800 | 1999 |
| Advanced Removal: In FY05, optimize induction heating parameters for medium caliber projectiles. In FY 06, will design and fabricate induction heating prototype for medium caliber projectiles. In FY 07, complete fabrication and initiate demonstration/validation of induction heating prototype for medium caliber projectiles. | 0 | 280 | 100 | 150 |
| The purpose of this one year Congressional add is to support an integrated Cryofracture/Plasma Arc capability. No additional funds are required to complete this project. | 0 | 4500 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Missile Recycling Center capability. No additional funds are required to complete this project. | 0 | 1400 | 0 | 0 |
| The purpose of this one year Congressional add is to support propellant conversion to fertilizer. No additional funds are required to complete this project. | 0 | 1500 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Thin Layer Chromatography technology. No additional funds are required to complete this project. | 0 | 2100 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Missile Recycling Center at Anniston. No additional funds are required to complete this project. | 2100 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Tactical Missile Reuse/Demil at Letterkenny. No additional funds are required to complete this project. | 1750 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Reclamation of Class 1.1 Rocket Propellant. No additional funds are required to complete this project. | 2000 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the HXM Requalification Program. No additional funds are required to complete this project. | 1000 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Explosive Demil Technology Program. No additional funds are required to complete this project. | 1000 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Thin Layer Chromatography technology. No additional funds are required to complete this project. | 2100 | 0 | 0 | 0 |

| **Accomplishments/Planned Program B(continued)** | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| The purpose of this one year Congressional add is to support the Innovative Demil Technology Program. No additional funds are required to complete this project. | 2100 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Demilitarization of Obsolete Munitions. No additional funds are required to complete this project. | 1750 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Demilitarization and Destruction of Conventional Ammunition. No additional funds are required to complete this project. | 1000 | 0 | 0 | 0 |
| The purpose of this one year Congressional add is to support the Bluegrass Supercritical Water Oxidation (SWCO) Program Demonstration. No additional funds are required to complete this project. | 1000 | 0 | 0 | 0 |
| Totals | 24180 | 18405 | 9865 | 10241 |

| **B. Program Change Summary** | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|
| Previous President's Budget (FY 2005) | 9706 | 9865 | 10042 |
| Current Budget (FY 2006/2007 PB) | 18405 | 9865 | 10241 |
| Total Adjustments | 8699 | 0 | 199 |
| Net of Program/Database Changes | | | |
| Congressional Program Reductions | -272 | | |
| Congressional Rescissions | | | |
| Congressional Increases | 9500 | | |
| Reprogrammings | | | |
| SBIR/STTR Transfer | -529 | | |
| Adjustments to Budget Years | | | 199 |

Change Summary Explanation:

Four FY05 Congressional adds totaling $9500 were added to this PE. Descriptions are included under Project D51 in this R-2 Exhibit.