

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

| BUDGET ACTIVITY | | PE NUMBER AND TITLE | | | | | |
|--|---------------------|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| 3 - Advanced technology development | | 0603734A - Military Engineering Advanced Technology | | | | | |
| COST (In Thousands) | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate | FY 2013 Estimate |
| Total Program Element (PE) Cost | 27100 | 28355 | 7654 | 5772 | 6798 | 6949 | 7106 |
| T08 COMBAT ENG SYSTEMS | 7587 | 6793 | 7654 | 5772 | 6798 | 6949 | 7106 |
| T13 Stationary Power & Energy Tech Demonstrations (CA) | 13703 | 15004 | | | | | |
| T15 MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA) | 5810 | 6558 | | | | | |

A. Mission Description and Budget Item Justification: The objective of this advanced technology development program element (PE) is to mature and demonstrate advanced military engineering and geospatial research and engineering technologies that support the Future Force, and where feasible, exploit opportunities to enhance Current Force capabilities. Technologies demonstrated within this PE are transitioned from PE 0602784A (Military Engineering Technology). Military engineering technologies demonstrated include Joint Rapid Airfield Construction (JRAC) technologies that support the expedient upgrading of existing airfields and rapid construction of new contingency airfields. Geospatial research and engineering technologies demonstrated include Battlespace Terrain Reasoning and Awareness (BTRA) and Joint-Geospatial Enterprise Services(J-GES) technologies. BTRA enables the warfighter to understand the impact of the terrain and weather effects during planning and execution of military operations. The J-GES program matures and demonstrates technology that supports network centric delivery and update of geospatial data and services to all echelons for battle command planning and mission rehearsal. The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Science and Technology Master Plan, the Army Modernization Strategy, and the Army Posture Statement. The U.S. Army Engineer Research and Development Center, headquartered at Vicksburg, Mississippi, executes the project work.

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| <u>B. Program Change Summary</u> | FY 2007 | FY 2008 | FY 2009 |
|--|---------|---------|---------|
| Previous President's Budget (FY 2008/2009) | 27688 | 6837 | 7676 |
| Current BES/President's Budget (FY 2009) | 27100 | 28355 | 7654 |
| Total Adjustments | -588 | 21518 | -22 |
| Congressional Program Reductions | | -182 | |
| Congressional Rescissions | | | |
| Congressional Increases | | 21700 | |
| Reprogrammings | 125 | | |
| SBIR/STTR Transfer | -713 | | |
| Adjustments to Budget Years | | | -22 |

Twelve FY08 congressional adds totaling \$21700 were added to this PE.

- (\$500) Natural Gas Firetube Boiler Demonstration
- (\$1000) Zero Energy Homes at Ft, Knox, Kentucky
- (\$1000) Fireproofing/Corrosion Resistant Coating System for Military Infrastructure
- (\$1200) Gas Engine Driven Air Conditioning Demonstration (GEDAC)
- (\$1600) Synthetic Auto Virtual Environment (SAVE)
- (\$1600) Army Applications of Direct Carbon Fuel Cells
- (\$1600) Defense Applications of Carbonate Fuel Cells
- (\$2000) Advanced Tactical Fuels for the Military
- (\$2000) Direct Methanol Fuel Cell Development
- (\$2200) Development and Research of Zero Energy Homes at Ft, Campbell
- (\$3000) Regenerative Fuel Cell System for Silent Camp Operations
- (\$4000) JGES for Improved Combat Situational Awareness

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February 2008

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|--|---------------------|--|---------------------|---------------------|---------------------|---------------------|------------------------------|--|
| BUDGET ACTIVITY 3 - Advanced technology development | | PE NUMBER AND TITLE 0603734A - Military Engineering Advanced Technology | | | | | PROJECT T08 | |
| COST (In Thousands) | FY 2007 Estimate | FY 2008 Estimate | FY 2009 Estimate | FY 2010 Estimate | FY 2011 Estimate | FY 2012 Estimate | FY 2013 Estimate | |
| T08 COMBAT ENG SYSTEMS | 7587 | 6793 | 7654 | 5772 | 6798 | 6949 | 7106 | |

A. Mission Description and Budget Item Justification: The objective of this advanced technology development project is to mature and demonstrate advanced military engineering and geospatial research and engineering technologies that support the Future Force and, where feasible, exploit opportunities to enhance Current Force capabilities. Technologies demonstrated within this project are transitioned from program element 0602784A (Military Engineering Technology), projects 855, T40, and T42. Joint Rapid Airfield Construction (JRAC) technologies support the expedient upgrading of existing airfields and rapid construction of new contingency airfields. Battlespace Terrain Reasoning and Awareness (BTRA) technologies enable the warfighter to understand the impact of the terrain and weather effects during planning and execution of military operations. Technologies developed in this area will be advanced through future work in Battlespace Terrain Reasoning and Awareness - Battle Command (BTRA-BC) efforts to increase the agility of the decision making process. The Joint-Geospatial Enterprise Services (J-GES) research program matures and demonstrates technology that supports network centric delivery and update of geospatial data and services to all echelons for battle command planning and mission rehearsal. The cited work is consistent with the Department of Defense Research and Engineering Strategic Plan, the Army Science and Technology Master Plan, the Army Modernization Strategy, and the Army Posture Statement. The US Army Engineer Research and Development Center, headquartered at Vicksburg, Mississippi, executes the project work.

| <u>Accomplishments/Planned Program:</u> | <u>FY 2007</u> | <u>FY 2008</u> | <u>FY 2009</u> |
|--|----------------|----------------|----------------|
| Joint Rapid Airfield Construction (JRAC): In FY07, successfully demonstrated JRAC technologies for site selection, enhanced construction, and rapid soil stabilization for C-17 contingency airfield operations during the Talisman Sabre Exercise at Bradshaw Field Training Area in Northern Territory, Australia. | 2005 | | |
| Joint-Geospatial Enterprise Services (J-GES): In FY07, expanded J-GES capabilities including developing a technical architecture that supports evaluation of concept. Performed initial experiments based on this architecture that focused on determining where geospatial services should be employed and the value of these services to the military decision-making process. In FY08, continue evaluation focused on assessing geospatial data/information flow across multiple echelons to support battle command planning and mission rehearsal, as well as identifying transition opportunities for these geoservices to Battle Command and Intelligence, Surveillance, and Reconnaissance programs. In FY09, will transition urban-focused geospatial research and technologies developed under PE/project 0602784A/855 into the J-GES environment for demonstration and validation. | 2715 | 1147 | 1286 |
| Battlespace Terrain Reasoning and Awareness - Battle Command (BTRA-BC): In FY07, tested, evaluated and validated spatial and predictive analysis tools through experiments within simulated battle command and intelligence, surveillance and reconnaissance environments leveraging the J-GES as a specific beta evaluation testbed. The transitioned technologies were accredited and posted for community download and use in late FY07. In FY08, accredit sensor effects software developed using Capability Maturity Model Integration (CMMI) processes and transition to Commercialized Joint Mapping Tool Kit program of record. In FY09, will demonstrate and evaluate tools designed for urban data and urban routing structures within J-GES. | 2867 | 5537 | 6368 |
| Small Business Innovative Research/Small Business Technology Transfer Programs | | 109 | |
| Total | 7587 | 6793 | 7654 |

