

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

7 - Operational system development

PE NUMBER AND TITLE

0203735A - Combat Vehicle Improvement Programs

| 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 | Cost to Complete | Total Cost |
|---------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
| Total Program Element (PE) Cost | 3108 | 17174 | 12030 | 12547 | 27409 | 5936 | | | | 185544 |
| 330 ABRAMS TANK IMPROVE PROG | 24949 | 15257 | 12030 | 12547 | 27409 | 5936 | 0 | 0 | 0 | 178458 |
| 718 GRND COMBAT VEHICLE HTI | 6069 | 1917 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7086 |

A. Mission Description and Budget Item Justification: This Program Element (PE) corrects vehicle deficiencies identified in Army operations; continues technical system upgrades; addresses needed evolutionary enhancements to tracked combat vehicles; and, develops technology improvements which have application to or insertion opportunities across multiple Ground Combat Systems vehicles. This PE provides combat effectiveness and Operating and Support (O&S) cost reduction enhancements for the Abrams tanks through a series of product improvements.

| B. Program Change Summary | FY 2005 | FY 2006 | FY 2007 |
|---------------------------------------|---------|---------|---------|
| Previous President's Budget (FY 2005) | 15952 | 12796 | 13089 |
| Current Budget (FY 2006/2007 PB) | 17174 | 12030 | 12547 |
| Total Adjustments | 1222 | -766 | -542 |
| Net of Program/Database Changes | | | |
| Congressional Program Reductions | -284 | | |
| Congressional Rescissions | | | |
| Congressional Increases | 2000 | | |
| Reprogrammings | | | |
| SBIR/STTR Transfer | -494 | | |
| Adjustments to Budget Years | | -766 | -542 |

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

February 2005

BUDGET ACTIVITY
7 - Operational system development

PE NUMBER AND TITLE
0203735A - Combat Vehicle Improvement Programs

PROJECT
330

| 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 | Cost to Complete | Total Cost |
|------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
| 330 ABRAMS TANK IMPROVE PROG | 24949 | 15257 | 12030 | 12547 | 27409 | 5936 | 0 | 0 | 0 | 178458 |

A. Mission Description and Budget Item Justification: This project funds improvements to the Abrams Main Battle Tank (M1 series) and the Abrams Family of Vehicles (FOV). The Abrams mission is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The M1A2 was the Army's first fully digital ground combat system developed under this project. It was succeeded by the M1A2 SEP, which is the current production model. SEP refers to a System Enhancement Package, which upgraded the M1A2's computer systems and its night vision capabilities. Post SEP development efforts are focusing on improvements yielding significant life cycle cost reductions, survivability enhancements and spiral technologies. Spiral Development will leverage experience in an urban environment and Future Combat Systems (FCS) technologies to integrate them into current systems. This could include items such as Survivability Enhancements, Power Management, Interoperability/networking capabilities and lethality. The objective is to maintain Survivability, Combat Overmatch and reduce Operational and Support (O&S) costs.

Accomplishments/Planned Program

| | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|--|---------|---------|---------|---------|
| M1A1 FLIR | 14025 | 3000 | 0 | 0 |
| Power Train Improvement & Integration Optimization Program (i.e., Total Integrated Engine Revitalization (TIGER), Transmission, Common Controller, Auxiliary Power Unit (APU)) | 8697 | 1000 | 1000 | 1000 |
| Abrams Suspension Improvement Program (i.e., Track, Roadwheels, Roadarms) | 933 | 0 | 1000 | 0 |
| Improved Situational Awareness/Survivability (i.e. Driver's Rear Facing Camera, Tank Commanders 360 Camera, Improved Drivers Site (IDS), Active Protection System (APS), Abrams Tank Urban Survivability Kit (TUSK)) | 0 | 3093 | 1000 | 1000 |
| Profile Verification Program (PVP) | 0 | 700 | 200 | 200 |
| Advanced Technology Insertion | 0 | 0 | 4566 | 6083 |
| Testing | 25 | 6200 | 3000 | 3000 |
| Engineering support | 1269 | 1264 | 1264 | 1264 |
| Totals | 24949 | 15257 | 12030 | 12547 |

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Programs

PROJECT
330

| B. Other Program Funding Summary | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | To Compl | Total Cost |
|---|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| Abrams Upgrade Program (GA0750) | 1928 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1928 |
| Abrams Vehicle Modification (GA0700) | 111056 | 116466 | 443475 | 368916 | 344719 | 301955 | 0 | 0 | 601000 | 2287587 |
| System Enhancement Pgm (GA0730) | 180050 | 291024 | 0 | 40944 | 169410 | 301629 | 11299 | 0 | 0 | 994356 |
| Abrams Training Devices (GB1302) | 0 | 6997 | 3709 | 1098 | 1100 | 1102 | 0 | 0 | 0 | 14006 |
| Training Device Mod (GA5208) | 6206 | 3629 | 3754 | 1098 | 1100 | 1102 | 0 | 0 | 0 | 16889 |
| Initial Spares (GE0161) | 5350 | 11403 | 3342 | 0 | 0 | 0 | 0 | 0 | 0 | 20095 |

C. Acquisition Strategy: Honeywell is the prime contractor for the Abrams TIGER Program. General Dynamics Land Systems Division (GDLS) is the prime contractor for the vehicle integration effort.

| ARMY RDT&E COST ANALYSIS(R3) | | | | | | | | | February 2005 | | | |
|--|------------------------|---|----------------|--------------|--|--------------|--------------------|--------------|--------------------|-----------------------|------------|--------------------------|
| BUDGET ACTIVITY 7 - Operational system development | | | | | PE NUMBER AND TITLE 0203735A - Combat Vehicle Improvement Programs | | | | | PROJECT 330 | | |
| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2005 Cost | FY 2005 Award Date | FY 2006 Cost | FY 2006 Award Date | FY 2007 Cost | FY 2007 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| a . Power Train Improvement & Integration Optimization Program (TIGER) | C-CPAF | Honeywell International Phoenix, AZ | 23427 | 1000 | | 1000 | | 1000 | | 0 | 26427 | 191659 |
| b . Integration of improved engine into vehicle | SS-CPFF | General Dynamics Sterling Heights, MI | 11459 | 0 | | 0 | | 0 | | 0 | 11459 | 84786 |
| c . Abrams Suspension Improvement Program (Track) | | United Defense Technologies, Huntsville, AL | 933 | 0 | | 1000 | | 0 | | 0 | 1933 | 0 |
| d . Improved Situational Awareness/Survivability | TBD | TBD | 0 | 3093 | | 1000 | | 1000 | | 0 | 5093 | 0 |
| e . PVP/MRM | MIPR | PM, MAS | 0 | 700 | | 200 | | 200 | | 0 | 1100 | 0 |
| f . Advance Technology Insertion | | General Dynamics Sterling Heights, MI | 0 | 0 | | 4566 | | 6083 | | 0 | 10649 | 0 |
| g . FLIR | FFP | Raytheon Company, Mc Kinney, TX | 7024 | 0 | | 0 | | 0 | | 0 | 7024 | 0 |
| h . FLIR integration into tank | SS-CPFF | General Dynamics Sterling Heights, MI | 7000 | 3000 | | 0 | | 0 | | 0 | 10000 | 0 |
| | | | | | | | | | | | | |
| Subtotal: | | | 49843 | 7793 | | 7766 | | 8283 | | 0 | 73685 | 276445 |

| ARMY RDT&E COST ANALYSIS(R3) | | | | | | | | | February 2005 | | | |
|---|------------------------|---|----------------|--------------|---|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| BUDGET ACTIVITY 7 - Operational system development | | | | | PE NUMBER AND TITLE 0203735A - Combat Vehicle Improvement Programs | | | | | PROJECT 330 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| II. Support Cost | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2005 Cost | FY 2005 Award Date | FY 2006 Cost | FY 2006 Award Date | FY 2007 Cost | FY 2007 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| a . Engineering Support | MIPR | Various | 1264 | 1264 | 1-3Q | 1264 | 1-3Q | 1264 | | 0 | 5056 | 0 |
| | | | | | | | | | | | | |
| Subtotal: | | | 1264 | 1264 | | 1264 | | 1264 | | 0 | 5056 | 0 |
| | | | | | | | | | | | | |
| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2005 Cost | FY 2005 Award Date | FY 2006 Cost | FY 2006 Award Date | FY 2007 Cost | FY 2007 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| a . M1A1-FLIR | MIPR | Aberdeen Proving Ground, MD | 0 | 2500 | | 0 | | 0 | | 0 | 2500 | 0 |
| b . Track testing | MIPR | Yuma Proving Ground, AZ | 25 | 3500 | | 0 | | 0 | | 0 | 3525 | 0 |
| c . Improved Situational Awareness/Survivability | MIPR | Aberdeen Proving Ground, MD | 0 | 200 | | 0 | | 0 | | 0 | 200 | 0 |
| d . Various sites | MIPR | Aberdeen Proving Ground, MD; Yuma Proving Ground, AZ; White Sands Missile Range, NM | 0 | 0 | 2-4Q | 3000 | 2-4Q | 3000 | 2-4Q | 0 | 6000 | 0 |
| | | | | | | | | | | | | |

| ARMY RDT&E COST ANALYSIS(R3) | | | | | | | | | February 2005 | | | |
|---|------------------------------|-----------------------------------|-------------------|-----------------|---|-----------------|--------------------------|-----------------|--------------------------|---------------------|---------------|--------------------------------|
| BUDGET ACTIVITY 7 - Operational system development | | | | | PE NUMBER AND TITLE 0203735A - Combat Vehicle Improvement Programs | | | | | PROJECT 330 | | |
| III. Test and Evaluation (continued) | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2005 Cost | FY 2005 Award Date | FY 2006 Cost | FY 2006 Award Date | FY 2007 Cost | FY 2007 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| | | | 25 | 6200 | | 3000 | | 3000 | | 0 | 12225 | 0 |
| Subtotal: | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2005 Cost | FY 2005 Award Date | FY 2006 Cost | FY 2006 Award Date | FY 2007 Cost | FY 2007 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| | | | 0 | 0 | | 0 | | 0 | | 0 | 0 | 0 |
| Subtotal: | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Project Total Cost: | | | 51132 | 15257 | | 12030 | | 12547 | | 0 | 90966 | 276445 |
| | | | | | | | | | | | | |

| Schedule Profile (R4 Exhibit) | | | | | | | | | | | | | | | | | | | | February 2005 | | | | | | | | | | | | |
|---|-------|---|---|---|-------|---|---|---|-------|---|---|---|-------|---|---|---|-------|---|---|---------------|-------|----------------|---|---|-------|---|---|---|-------|--|--|--|
| BUDGET ACTIVITY 7 - Operational system development | | | | | | | | | | PE NUMBER AND TITLE 0203735A - Combat Vehicle Improvement Programs | | | | | | | | | | | | PROJECT 330 | | | | | | | | | | |
| Event Name | FY 04 | | | | FY 05 | | | | FY 06 | | | | FY 07 | | | | FY 08 | | | | FY 09 | | | | FY 10 | | | | FY 11 | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | | |
| Total Integrated Engine Revitalization (TIGER) Program | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TIGER Development (Honeywell) and Integration (GDLS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TIGER Government Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) TIGER Production Contract Award | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alternative Auxiliary Power Unit (AAPU) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) AAPU Development Award | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AAPU Production | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M1A1 2nd GEN FLIR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) M1A1 2nd GEN FLIR Development Contract Award | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Improved Situational Awareness/Spiral Development Program | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M1A1 2nd GEN FLIR Production | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PVP/MRM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Schedule Detail (R4a Exhibit) | | February 2005 |
|---|---|----------------|
| BUDGET ACTIVITY 7 - Operational system development | PE NUMBER AND TITLE 0203735A - Combat Vehicle Improvement Programs | PROJECT 330 |
| <p><u>Schedule Detail:</u> Not applicable for this item.</p> | | |