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| ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | DATE February 2000 |
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| BUDGET ACTIVITY 7 - Operational System Development | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles |
|--|--|

| COST (<i>In Thousands</i>) | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
|---|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
| Total Program Element (PE) Cost | 50189 | 43087 | 29427 | 11871 | 10110 | 21892 | 24541 | Continuing | Continuing |
| D114 Tactical Unmanned Aerial Vehicles | 50189 | 43087 | 27141 | 11871 | 10110 | 21892 | 24541 | Continuing | Continuing |
| D123 Joint Technical Center Systems Integration Lab | 0 | 0 | 2286 | 0 | 0 | 0 | 0 | Continuing | Continuing |

A. Mission Description and Justification: The Brigade Tactical Unmanned Aerial Vehicle (TUAV), provides Army brigades/battalions with dedicated day/night, reconnaissance, surveillance and target acquisition (RSTA) and intelligence. TUAV provides the tactical warfighting commander with critical battlefield information in the rapid cycle time required for success at the tactical level. The TUAV system consists of multiple air vehicles, each configured with an electro-optic (EO)/infrared (IR) sensor payload, ground control equipment, including communications equipment, launch and recovery equipment, remote video terminal, Highly Mobile Multi Wheeled Vehicles with trailer(s), and one mobile maintenance facility capable of supporting up to three TUAV systems. This TUAV development effort provides systems in the hands of the brigade operational users as quickly as possible, systems for use in demonstrations/Initial Operational Test & Evaluation (IOT&E) and continues development of TUAV system improvements. Tactical Control System (TCS) software will be integrated with the TUAV system when available and validated. The JTC/SIL is a joint integration center that develops simulations of tactical UAVs and strategic reconnaissance and imagery. It also utilizes the Modernized Imagery Exploitation System (MIES), the Enhanced Tactical Radar Correlator (ETRAC), and a variety of C4I systems and interfaces, namely the Tactical Control System. The MUSE system provides for the development of real-time, interoperable hardware and operator in-the-loop simulations of multiple intelligence systems that may be integrated with larger simulations in support of Service exercises. MUSE development provides a realistic operational environment that supports a wide range of information efforts.

| B. Program Change Summary | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> |
|--|----------------|----------------|----------------|
| Previous President's Budget (<u>FY 2000/2001</u> PB) | 53224 | 3866 | 4309 |
| Appropriated Value | 53636 | 43866 | |
| Adjustments to Appropriated Value | | | |
| a. Congressional General Reductions | -412 | | |
| b. SBIR / STTR | -1732 | | |
| c. Omnibus or Other Above Threshold Reduction | | -179 | |
| d. Below Threshold Reprogramming | -1041 | | |
| e. Rescissions | -262 | -600 | |
| Adjustments to Budget Years Since <u>FY 2000/2001</u> PB | | | 25118 |
| Current Budget Submit (<u>FY 2001</u> PB) | 50189 | 43087 | 29427 |

Change Summary Explanation: FY00 and FY01 funding was increased to fully fund the TUAV planned program in accordance with the Army Position of Cost.

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| ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit) | | | | | | | DATE February 2000 | | |
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| BUDGET ACTIVITY 7 - Operational System Development | | | | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | | | | PROJECT D114 | |
| COST (In Thousands) | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| D114 Tactical Unmanned Aerial Vehicles | 50189 | 43087 | 27141 | 11871 | 10110 | 21892 | 24541 | Continuing | Continuing |
| <p>A. Mission Description and Budget Item Justification: The Brigade Tactical Unmanned Aerial Vehicle (TUAV), provides Army brigades/battalions with dedicated day/night, reconnaissance, surveillance and target acquisition (RSTA) and intelligence. TUAV provides the tactical warfighting commander with critical battlefield information in the rapid cycle time required for success at the tactical level. The TUAV system consists of multiple air vehicles, each configured with an electro-optic (EO)/infrared (IR) sensor payload, ground control equipment, including communications equipment, launch and recovery equipment, remote video terminal, Highly Mobile Multi Wheeled Vehicles with trailer(s), and one mobile maintenance facility capable of supporting up to three TUAV systems. This TUAV development effort provides systems in the hands of the brigade operational users as quickly as possible, systems for use in demonstrations/Initial Operational Test & Evaluation (IOT&E) and continues development of TUAV system improvements. Tactical Control System (TCS) software will be integrated with the TUAV system when available and validated.</p> <p>FY 1999 Accomplishments:</p> <ul style="list-style-type: none"> • 17800 Tactical UAV Low Rate Initial Production (LRIP) Program • 7200 TUAV Source Selection/System Capabilities Demo • 4900 Development of TUAV Ground Control Station Architecture (3 Prototypes) • 350 Army Apache/UAV Interoperability Demonstration • 10600 Outrider Advance Concept Technology Demonstration (ACTD) Bridge Contract • 250 Tactical Common Data Link Integration • 4140 Hunter UAV non-recurring (e.g. Enhanced Mission Payloads) to support JRTC (Joint Readiness Training Center) requirements. • 4279 Program Management Support • 200 Improved EO/IR Payload Modification/Integration Assessment for Demo on Hunter • 270 Advanced Payload Development Support • 200 Tactical Control System Integration <p>Total 50189</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 19944 Tactical UAV Low Rate Initial Production (LRIP) Program • 3236 Government Furnished Equipment for 4 LRIP TUAV systems for development and IOT&E • 1500 Tactical Control System Integration • 3600 Program Management Support • 5821 Risk Reduction Testing/ST&E/IOT&E Preparation | | | | | | | | | |
| Project D114 | Page 2 of 8 Pages | | | | Exhibit R-2A (PE 0305204A) | | | | |

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| BUDGET ACTIVITY 7 - Operational System Development | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | PROJECT D114 |
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FY 2000 Planned Program: (continued)

- 400 Heavy Fuel Engine Program/Demo Preparation for Shadow 200 UAV
- 2200 ACTD Contract Close-out
- 2226 Advanced Payload Development / Modification / Integration
- 1000 Tactical Common Data Link Integration
- 500 Objective Capability Assessment for Block Upgrades
- 1500 SIL/MUSE
- 1160 Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)
- Total 43087

FY 2001 Planned Program:

- 4058 Complete Tactical UAV Low Rate Initial Production (LRIP) Program
- 1500 Tactical Control System Integration
- 2000 Heavy Fuel Engine Program/Demo for Shadow 200 UAV
- 1660 Tactical Common Data Link Integration
- 2200 Program Management Support
- 6973 Risk Reduction Testing/ST&E/IOT&E
- 750 Site Activation for Fielding LRIP Systems
- 4550 Objective Capability Development of Block Upgrades such as Extended Range/Endurance, TCS, TCDL, Advanced Sensor Payloads and Increased Weight, Space and Power Capacity for Payloads.
- 3450 Advanced Payload Development / Modification / Integration
- Total 27141

| B. Other Program Funding Summary | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>FY 2002</u> | <u>FY 2003</u> | <u>FY 2004</u> | <u>FY 2005</u> | <u>To Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|-------------------|
| TUAV Procurement (BA0330) | 0 | 796 | 37789 | 44670 | 57356 | 63064 | 51350 | Continue | Continue |

Note: Other related Navy dollars fund the development of TCS software for integration into the TUAV under this project.
Other related DARPA dollars fund the development of the TCDL for integration into the TUAV under this project

C. Acquisition Strategy: The Army strategy is to quickly field a TUAV system to meet the Brigade Commander's needs. The system will be largely off the shelf, meeting Key Performance Parameters of the 12 March 1999 Operational Requirements Document (ORD), with other ORD requirements treated as prioritized trade space. Growth to objective requirements will be accomplished using block upgrades. A TUAV Request for Proposal was issued in April 1999 including a Fixed Price Incentive Fee option for Low Rate Initial Production (LRIP) Systems, a full rate production option and various support options. Initial offers were screened and a System Capabilities Demonstration (SCD) was conducted with four contractors. The results from the SCD in conjunction with proposal evaluations resulted in the competitive down select of a Best Value TUAV system. A successful Milestone II ASARC was conducted on 21 December 1999, and a TUAV LRIP contract was awarded to the AAI Corporation on 27

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December 1999. A successful LRIP program will lead to a MS III decision and award of full rate production. In addition, PEO IEW&S is assessing prudent approaches to accelerating fielding of the TUAV systems following a successful system OPTEMPO demonstration. Continued development of the selected TUAV system will be accomplished through a series of block upgrades to incorporate improvements such as extended range and endurance, increased payload weight space and power capability, TCS, TC DL and advanced sensor payloads as they mature and are operationally proven.

| D. Schedule Profile | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>FY 2002</u> | <u>FY 2003</u> | <u>FY 2004</u> | <u>FY 2005</u> |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| DAB meeting on ACTD Program Transition Plan | 2Q | | | | | | |
| Milestone I | 3Q | | | | | | |
| Conduct System Capabilities Demonstration | 4Q | 1Q | | | | | |
| Milestone II / LRIP Decision & LRIP Award | | 1Q | | | | | |
| First LRIP System Delivery | | | 1Q | | | | |
| Field LRIP Systems to Training Base | | | 2Q | | | | |
| OPTEMPO Demonstration | | | 2Q | | | | |
| Special In-Process Review/Decision to Accelerate | | | 2Q | | | | |
| Award FY01 Production Ramp-Up portion of LRIP | | | 2Q | | | | |
| IOT&E Preparation and IOT&E | | 4Q | 1-3Q | | | | |
| Field IOT&E LRIP system to IOT&E User | | | 4Q | | | | |
| Milestone III / Production Decision | | | 4Q | | | | |
| Award Full Rate Production | | | | 1Q | | | |
| Follow-On Limited User Test | | | | 4Q | | | |
| TUAV First Unit Equipped | | | | | 1Q | | |
| Complete Development/Demo Block 2 Upgrades | | | | 4Q | | | |
| Payload Development/Improvements | | 1Q-4Q | 1Q-4Q | 1Q-4Q | 1Q-4Q | 1Q-4Q | 1Q-4Q |

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| ARMY RDT&E COST ANALYSIS (R-3) | DATE February 2000 |
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| BUDGET ACTIVITY 7 - Operational System Development | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | PROJECT D114 |
|---|---|-------------------------------|

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 1999 Cost | FY 1999 Award Date | FY 2000 Cost | FY 2000 Award Date | FY 2001 Cost | FY 2001 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a. TUAV LRIP Program | Comp / FPIF | AAI Corporation | | 17800 | 1Q 00 | 19944 | 2Q | 4058 | 1Q | | 41802 | |
| b. Objective Capability Assessment/Development | Comp / FPIF | AAI Corporation | | | | 500 | 2Q | 4550 | 1Q | Continue | 5050 | |
| c. TUAV Ground Control Station Architecture | Comp / FPIF | Sys Integration Lab, AMCOM, Redstone | | 4900 | 1Q 00 | | | | | Continue | 4900 | |
| d. TCDL Integration | MIPR | Sys Integration Lab, AMCOM, Redstone | | 250 | 1Q00 | | | | | | 250 | |
| e. TCDL Integration | Comp / FPIF | To Be Selected | | | | 1000 | 3Q | 1660 | 1Q | Continue | 2660 | |
| f. Payload Modification/ Integration Assessment | Comp / Opt | AMCOM RDEC, Redstone, AL | | 200 | 4Q | | | | | | 200 | |
| g. Payload Development/ Mod/ Integration Spt | MIPR | PM TESAR | | 270 | 4Q | 2226 | 2Q | 3450 | 1Q | Continue | 5946 | |
| h. Heavy Fuel Engine/Demo | Comp / FPIF | To Be Selected | | | | 400 | 3Q | 2000 | 1Q | Continue | 2400 | |
| i. Army Apache/UAV Interoperability Demo | MIPR | AMCOM RDEC, Redstone, AL | | 350 | 3Q | | | | | Continue | 350 | |
| j. SSEB/Flyoff | Various Methods/Type | Various Activities/Locations | | 7200 | 3Q 99 -1Q 00 | | | | | Continue | 7200 | |
| k. Outrider ACTD Bridge | SS / FPIF | Alliant Techsystems Hopkins, MN | | 10600 | 1Q | | | | | Continue | 10600 | |
| l. Outrider Contract Closeout | SS / FPIF | Alliant Techsystems Hopkins, MN | | | | 2200 | 2Q | | | Continue | 2200 | |
| m. Hunter Residuals (JRTC non-recurring) | SS / FPIF | TRW Sierra Vista, AZ | | 4140 | 3Q | | | | | Continue | 4140 | |
| n. GFE | MIPR | Depot/PM To Be Determined | | | | 3236 | 2Q | | | Continue | 3236 | |
| o. TCS Integration | MIPR | AMCOM RDEC, Redstone, AL | | 200 | 4Q | 1500 | 2Q | 1500 | 1Q | Continue | 3200 | |
| p. Site Activation | MIPR | IOT&E Unit | | | | | | 750 | 1Q | Continue | 750 | |
| q. SIL/MUSE | MIPR | Sys Integration Lab, AMCOM, Redstone | | | | 1500 | 2Q | | | Continue | 1500 | |
| r. SBIR/STTR | | | | | | 1160 | | | | | 1160 | |
| Subtotal Product Development: | | | | 45910 | | 33666 | | 17968 | | | 97544 | |

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| ARMY RDT&E COST ANALYSIS (R-3) | | | | | | | | | | DATE February 2000 | | |
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| BUDGET ACTIVITY 7 - Operational System Development | | | | | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | | | | | PROJECT D114 | | |
| II. Support Costs | Contract Method & Type | Performing Activity & Location | Total PYs Cost | <u>FY 1999 Cost</u> | <u>FY 1999 Award Date</u> | <u>FY 2000 Cost</u> | <u>FY 2000 Award Date</u> | <u>FY 2001 Cost</u> | <u>FY 2001 Award Date</u> | Cost To Complete | Total Cost | Target Value of Contract |
| a. Contractor Engr Support | CPFF | Various AMCOM Contractors/Locations | | 1020 | 1Q | 1400 | 2Q | 691 | 1Q | Continue | 3111 | |
| b. Government Engr Spt | MIPR | AMCOM Redstone | | 1026 | 1Q | 1000 | 2Q | 650 | 1Q | Continue | 2676 | |
| Subtotal Support Costs: | | | | 2046 | | 2400 | | 1341 | | | 5787 | |
| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | <u>FY 1999 Cost</u> | <u>FY 1999 Award Date</u> | <u>FY 2000 Cost</u> | <u>FY 2000 Award Date</u> | <u>FY 2001 Cost</u> | <u>FY 2001 Award Date</u> | Cost To Complete | Total Cost | Target Value of Contract |
| a. Risk Reduction Testing/ST&E/IOT&E | MIPR | OPTEC/PM/Various AMCOM Contractors | | | | 5821 | 3Q | 6973 | 1Q | Continue | 12794 | |
| Subtotal Test and Evaluation: | | | | | | 5821 | | 6973 | | | 12794 | |
| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | <u>FY 1999 Cost</u> | <u>FY 1999 Award Date</u> | <u>FY 2000 Cost</u> | <u>FY 2000 Award Date</u> | <u>FY 2001 Cost</u> | <u>FY 2001 Award Date</u> | Cost To Complete | Total Cost | Target Value of Contract |
| a. Program Mgt Personnel | | PM UAV Redstone | | 2233 | 1Q | 1200 | 1Q | 859 | 1Q | Continue | 4292 | |
| Subtotal Management Services: | | | | 2233 | | 1200 | | 859 | | | 4292 | |
| Project Total Cost: | | | | 50189 | | 43087 | | 27141 | | | 120417 | |

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| BUDGET ACTIVITY 7 - Operational System Development | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | PROJECT D123 |
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| COST (In Thousands) | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
|---|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| D123 Joint Technical Center Systems Integration Lab | 0 | 0 | 2286 | 0 | 0 | 0 | 0 | Continuing | Continuing |

A. Mission Description and Budget Item Justification: The Joint Technology Center / System Integration Laboratory (JTC/SIL) is a joint integration center that develops simulations of tactical UAVs and strategic reconnaissance and imagery. It also utilizes the Modernized Imagery Exploitation System (MIES), the Enhanced Tactical Radar Correlator (ETRAC), and a variety of C4I systems and interfaces, namely the Tactical Control System. The MUSE system provides for the development of real-time, interoperable hardware and operator in-the-loop simulations of multiple intelligence systems that may be integrated with larger simulations in support of Service exercises. MUSE development provides a realistic operational environment that supports a wide range of information efforts. This project funds the management of the JTC/SIL and MUSE enhancements.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: Program funded in project D114.

FY 2001 Planned Program:

- 2286 JTC/SIL MUSE
- Total 2286

B. Other Program Funding Summary: None

C. Acquisition Strategy: Not applicable

| D. Schedule Profile | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| JTC/SIL MUSE Enhancement and Management | | | | | 1Q-4Q | | | | | |

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| BUDGET ACTIVITY 7 - Operational System Development | PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles | PROJECT D123 |
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| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2000 Cost | FY 2000 Award Date | FY 2001 Cost | FY 2001 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------------|------------------------|--------------------------------------|----------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a. JTC/SIL MUSE Enhancement & Mgmt | MIPR | Sys Integration Lab, AMCOM, Redstone | | | | 2286 | 1Q | | | |
| Subtotal Product Development: | | | | | | 2286 | | | | |

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

| | | | | | | | | | | |
|---------------------|--|--|--|--|--|------|--|--|--|--|
| Project Total Cost: | | | | | | 2286 | | | | |
|---------------------|--|--|--|--|--|------|--|--|--|--|