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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE |
|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** |

| | COST (In Thousands) | FY 2001 Actual | 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 | 35970 | 37880 | 46479 | 35260 | 51357 | 34487 | 28333 | Continuing | Continuing |
| 114 | TACTICAL UNMANNED AERIAL VEHICLE (TUAV) (JMIP) | 33705 | 24159 | 22928 | 11184 | 15631 | 11040 | 13148 | Continuing | Continuing |
| 11A | ADVANCED PAYLOAD DEVELOP & SPT (JMIP) | 0 | 11434 | 21250 | 15912 | 9722 | 990 | 988 | 0 | 60296 |
| 11B | DTSP DEVELOPMENT (JMIP) | 0 | 0 | 0 | 5868 | 23711 | 20107 | 11850 | 0 | 62100 |
| 123 | JOINT TECHNOLOGY CENTER SYSTEM INTEGRATION (JMIP) | 2265 | 2287 | 2301 | 2296 | 2293 | 2350 | 2347 | 0 | 16139 |

**A. Mission Description and Budget Item Justification:** The Tactical Unmanned Aerial Vehicle (TUAV) provides the Army 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, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is supported by a Maintenance Section-Multifunctional (MSM) as well as a divisional Mobile Maintenance Facility (MMF) capable of supporting up to four TUAV systems. Tactical Control System (TCS) software will be integrated with the TUAV system when available and validated. The Advanced Payload Development & Support efforts will establish the infrastructure to evaluate the maturity of the technology efforts and transition an employable TUAV capability. Development and fielding of the TRADOC System Manager (TSM) UAV's top 5 priorities include Synthetic Aperture Radio/Moving Target Indicator, Communication Relay Payload, Laser Designation, and Objective EO/IR. To support these efforts, a modeling and simulation capability/process is being developed to assess the operational benefit of these advanced technologies. Future initiatives will focus on the transition of technologies that directly supporting the Army's Objective Force, such as the development and fielding of countermine, counter camouflage, NBC and other specialty payloads as appropriate. The Joint Technology Center/System Integration Lab (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, like the TCS. The Multiple Unified Simulation Environment (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 supporting a wide range of information efforts.

TUAV was provided a supplemental fund called Defense Emergency Response Fund (DERF), as a non-add, for the following fiscal years with amounts: FY03 $21.6M, FY04 $32.0M, FY05 $24.0M, FY 06 $4.0M, and FY07 $2.0M.

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|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** |

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

| **B. Program Change Summary** | FY 2001 | FY 2002 | FY 2003 |
|---|---|---|---|
| Previous President's Budget (FY2002 PB) | 34110 | 38210 | 34126 |
| Appropriated Value | 34427 | 38210 | 0 |
| Adjustments to Appropriated Value | 0 | 0 | 0 |
| a. Congressional General Reductions | 0 | -330 | 0 |
| b. SBIR / STTR | 0 | 0 | 0 |
| c. Omnibus or Other Above Threshold Reprogramming | 0 | 0 | 0 |
| d. Below Threshold Reprogramming | 1859 | 0 | 0 |
| e. Rescissions | -316 | 0 | 0 |
| Adjustments to Budget Years Since FY2002 PB | 0 | 0 | 12353 |
| Current Budget Submit (FY 2003 PB ) | 35970 | 37880 | 46479 |

FY 03 funding was increased for Advanced Payload Development efforts.

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** | **114** |

| COST (In Thousands) | | FY 2001 Actual | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 114 | TACTICAL UNMANNED AERIAL VEHICLE (TUAV) (JMIP) | 33705 | 24159 | 22928 | 11184 | 15631 | 11040 | 13148 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification:** The Tactical Unmanned Aerial Vehicle (TUAV), provides the Army 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, and launch and recovery equipment), remote video terminal, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is supported by a Maintenance Section-Multifunctional, as well as a divisional Mobile Maintenance Facility capable of supporting up to four TUAV systems. Tactical Control System (TCS) software will be integrated with the TUAV system when available and validated.

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP). The TUAV is an Objective Force system.

**FY 2001 Accomplishments:**

- 17632 Tactical UAV Low Rate Initial Production (LRIP I) Program
- 3524 Program Management Support
- 4559 Risk Reduction Testing/Development Testing
- 1980 C4I Testing
- 1000 OPTEMPO Demonstration
- 810 Data Acquisition System (DAS) Instrumentation Van
- 750 IOT&E Preparation and Support/Travel
- 1200 Advanced Payload Development / Modification / Integration
- 500 Institutional Mission Simulator (IMS)
- 250 Tactical Control System

**FY 2001 Accomplishments: (Continued)**

- 1500 Objective Capability Development

Total 33705

**FY 2002 Planned Program**

- 3751 Program Management Support
- 1044 Objective Capability Development / C4I
- 2850 Development Testing / OPTEMPO Testing
- 1300 30 Level Maintenance Training
- 7500 Complete TUAV LRIP I Program
- 7714 IOT&E corrective action efforts and associated engineering support

Total 24159

**FY 2003 Planned Program**

- 2446 Program Management Support
- 15982 Objective Capability Development for increased range and endurance (Extended Range/Multi Purpose), TCS integration, Heavy Fuel Engine
- 2500 Digital Data Link development efforts
- 2000 Objective Capability Testing

Total 22928

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** | **114** |

| **B. Other Program Funding Summary** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 | To Compl | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| TUAV Procurement (BA0330) | 47441 | 56860 | 84290 | 102637 | 56339 | 184442 | 186298 | Continuing | Continuing |
| Initial Spares - TUAV (BS9738) | 0 | 0 | 15162 | 15391 | 4062 | 15128 | 15098 | 0 | 64841 |

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

**C. Acquisition Strategy:** A System Capability 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 December 1999. In order to accelerate fielding of the TUAV system, a second LRIP for four systems was awarded on 30 March 2001 following a successful OPTEMPO test. In order to maintain accelerated fielding and continue ramp up to full rate production, a third LRIP is planned. A successful LRIP program will lead to a MS C decision and award of full rate production. Continued development of the selected TUAV system will be accomplished through a series of upgrades to incorporate improvements such as extended range and endurance, increased payload weight space and power capability, TCS, Tactical Control Data Link and advanced sensor payloads as they mature and are operationally proven.

| **D. Schedule Profile** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| First LRIP System Delivery | 1Q | | | | | | |
| Deliver LRIP Systems to Training Base | 2Q | | | | | | |
| OPTEMPO Demonstration | 2Q | 1Q | | | | | |
| Special In-Process Review / LRIP II/ III Decision | 2Q | 1Q | | | | | |
| IOT&E Preparation and IOT&E | 1-4Q | 1-3Q | | | | | |
| Field IOT&E LRIP System to IOT&E User | | 4Q | | | | | |
| Milestone III / Production Decision | | 4Q | | | | | |
| Award Full Rate Production | | | 1Q | | | | |
| TUAV First Unit Equipped (FUE) | | 4Q | | | | | |
| Objective Capability Development / Improvements | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | | |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**114**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . TUAV LRIP Program | Comp / FPIF | AAI Corporation, MD | 38544 | 17632 | 1Q | 7500 | 1Q | 0 | | 0 | 63676 | 63676 |
| b . Government Furnished Equipment | MIPR | Various | 2036 | 0 | | 0 | | 0 | | 0 | 2036 | 2036 |
| c . Advanced Payload Development/Modification/ Integration | MIPR | PM UAV Payloads, Huntsville, AL | 2918 | 1200 | 1Q | 0 | | 0 | | 0 | 4118 | 4118 |
| d . Digital Data Link | CPFF | Various | 342 | 0 | | 0 | | 2500 | 1Q | 0 | 2842 | 2842 |
| e . Objective Capability Assessment/Development / C4I | Comp/FPIF | AAI Corporation, MD | 500 | 1500 | 1Q | 1044 | 2Q | 15982 | 1Q | Continue | Continue | Continue |
| f . SIL/MUSE | MIPR | Sys Integration Lab, AMCOM Redstone, AL | 1500 | 0 | | 0 | | 0 | | 0 | 1500 | 1500 |
| g . TUAV Ground Control Station Architecture | MIPR | Sys Integration Lab, AMCOM Redstone, AL | 7275 | 0 | | 0 | | 0 | | 0 | 7275 | 7275 |
| h . Institutional Mission Simulator | MIPR | Sys Integration Lab, AMCOM Redstone, AL | 2410 | 500 | 1Q | 0 | | 0 | | 0 | 2910 | 2910 |
| i . Tactical Control System | PWD | AMCOM RDEC Redstone, AL | 450 | 250 | 1Q | 0 | | 0 | | 0 | 700 | 700 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**114**

| I. Product Development (continued) | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| j . TUAV Source Selection/System Capabilities Demo | VariouS | Various | 7200 | 0 | | 0 | | 0 | | 0 | 7200 | 7200 |
| k . Army Apache/UAV Interoperability Demonstration | MIPR | AMCOM RDEC Redstone, AL | 350 | 0 | | 0 | | 0 | | 0 | 350 | 350 |
| l . Outrider Advance Concept Technology Demonstration Bridge Contract | SS/FPIF | Alliant Techsystems, Hopkins, MN | 10600 | 0 | | 0 | | 0 | | 0 | 10600 | 10600 |
| m . Hunter UAV non-recurring support | SS/FPIF | TRW, Sierra Vista, AZ | 4140 | 0 | | 0 | | 0 | | 0 | 4140 | 4140 |
| n . Improved EO/IR Payload Modification/Integration Assessment for Demo on Hunter | Comp/Opt | AMCOM RDEC Redstone, AL | 200 | 0 | | 0 | | 0 | | 0 | 200 | 200 |
| o . 30 Level Maintenance Training | Comp/FPIF | AAI Corporation, MD | 0 | 0 | | 1300 | 2Q | 0 | | 0 | 1300 | 1300 |
| p . IOT&E Corrective Actions/Engineering Support | CPFF / PWD | Various | 0 | 0 | | 7714 | 1Q | 0 | | 0 | 7714 | 7714 |
| | | | | | | | | | | | | |
| Subtotal: | | | 78465 | 21082 | | 17558 | | 18482 | | Continue | Continue | Continue |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**114**

| II. Support Cost | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Contractor Engineering Support | CPFF | Various | 2420 | 1500 | 1Q | 1095 | 1Q | 746 | 1Q | Continue | Continue | Continue |
| b . Government Engineering Support | PWD | AMCOM Redstone, AL | 2026 | 1024 | 1Q | 900 | 1Q | 850 | 1Q | Continue | Continue | Continue |
| | | | | | | | | | | | | |
| Subtotal: | | | 4446 | 2524 | | 1995 | | 1596 | | Continue | Continue | Continue |

| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Risk Reduction Testing/ST&E | MIPR | Various | 8972 | 4559 | 1Q | 0 | | 0 | | 0 | 13531 | 13531 |
| b . Development Testing/ Objective Capability Testing / OPTEMPO Testing | MIPR | Various | 0 | 0 | | 2850 | 1Q | 2000 | 1Q | Continue | Continue | Continue |
| c . C4I Testing | MIPR | Various | 0 | 1980 | 1Q | 0 | | 0 | | 0 | 1980 | 1980 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**114**

| III. Test and Evaluation (continued) | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d . OPTEMPO Demo | MIPR | Various | 0 | 1000 | 1Q | 0 | | 0 | | 0 | 1000 | 1000 |
| e . Data Acquisition System (DAS) Instrumentation Van | MIPR | Redstone Technical Test Center, AL | 0 | 810 | 1Q | 0 | | 0 | | 0 | 810 | 810 |
| f . IOT&E Preparation and Support/Travel | MIPR | ATEC/PM/OGA Ft. Hood, TX | 0 | 750 | 1Q | 0 | | 0 | | 0 | 750 | 750 |
| | | | | | | | | | | | | |
| Subtotal: | | | 8972 | 9099 | | 2850 | | 2000 | | Continue | Continue | Continue |

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Program Mgt Personnel | MIPR | PM UAV Redstone, AL | 3393 | 1000 | 1Q | 1756 | 1Q | 850 | 1Q | Continue | Continue | Continue |
| | | | | | | | | | | | | |
| Subtotal: | | | 3393 | 1000 | | 1756 | | 850 | | Continue | Continue | Continue |
| Project Total Cost: | | | 95276 | 33705 | | 24159 | | 22928 | | Continue | Continue | Continue |

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** | **11A** |

| COST (In Thousands) | | FY 2001 Actual | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 11A | ADVANCED PAYLOAD DEVELOP & SPT (JMIP) | 0 | 11434 | 21250 | 15912 | 9722 | 990 | 988 | 0 | 60296 |

**A. Mission Description and Budget Item Justification:** The Shadow Tactical Unmanned Aerial Vehicle (TUAV) provides Army brigades/battalions with dedicated day/night Reconnaissance, Surveillance and Target Acquisition (RSTA) and intelligence. Additionally, the Extended Range-Multi-Purpose (ER-MP) TUAV will provide support to the Army divisions/corps with dedicated RSTA and intelligence support. Both TUAV air vehicles (with a common ground control station) will provide the tactical warfighting commander with critical battlefield information in the rapid cycle time required for success at the tactical level. Development and fielding of the Combat Developer's UAV's top 5 priorities include Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI), Communication Relay Payload, Laser Designation, Advanced Electro Optical/Infrared (EO/IR) and Hyperspectral Sensor. The SAR/MTI Payload will provide a wide area search capability with a built-in imaging sensor that provides all-weather capability. This will allow for a surveillance and increased situational awareness capability. Initial SAR/MTI Payloads will be provided to those Interim Brigade Combat Teams (IBCT) which are equipped with Shadow Block II. Subsequent deliveries will support the Objective Force. The Advanced EO/IR Payload will provide RSTA and intelligence at greater standoff ranges (which improves platform survivability) at increased targeting accuracies as well as providing the foundation for broader mission applications (i.e. Rapid Terrain Visualization, Countermine, etc). The Laser Designator Payload will allow target designation for aviation forces to better engage and destroy enemy forces. This will also contribute to enhancing the survivability of aviation "manned" platforms. The Communications Relay Payload (CRP) will extend the communications links to better support forward deployed friendly forces in "deep attack" operations. This will also contribute to greater situational awareness. To support these efforts, a modeling and simulation capability/process is being developed to assess the operational benefit of these advanced technologies. Future initiatives will focus on the transition of technologies directly supporting the Army's Objective Force. These include the development and fielding of Countermine, Counter Camouflage (Hyperspectral), Nuclear, Biological and Chemical (NBC) and other specialty payloads as appropriate.

This system supports both the Interim and Objective Force transition paths of the Transformation Campaign Plan (TCP).

**FY 2002 Planned Program**

- 1700 Program Management/Engineering Support.
- 8700 Continue SAR/MTI Development and Integration (initiated under Project 114) and perform SAR/MTI Military Utility Assessment
- 734 Conduct Advanced EO/IR Operational Capability Assessment and MS B decision.
- 300 Conduct Communication Relay Payload A-Kit Development.

Total 11434

**FY 2003 Planned Program**

- 1900 Program Management/Engineering Support.
- 7400 Continue and complete SAR/MTI Development and Integration - includes Development Test (DT) start. Deliveries of up to nine (9) SDD Test Articles will support DT and Operational Test (OT).
- 6700 Initiate Advanced EO/IR Development and Integration.
- 3000 Initiate miniaturized Light Detection and Ranging (LIDAR) sensor package development efforts.
- 350 Continue Advanced Payload Modeling and Simulation.
- 1300 Establish Payload Test Bed to support Development Test/Operational Test (DT/OT) for Advanced Payloads. (Includes one Digital Data Link, one Ground Control Station and Aircraft/Crew Lease.) Payload Test Bed will leverage other payloads, specifically PM SW's Division Tactical UAV SIGINT Payload (DTSP).
- 600 Conduct Test Support Planning and Execution ($300K - DT, $300K - OT).

Total 21250

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** | **11A** |

| **B. Other Program Funding Summary** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 | To Compl | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| Advanced TUAV Payloads (B00302) | 0 | 0 | 0 | 6256 | 6439 | 0 | 0 | 0 | 12695 |

**C. Acquisition Strategy:** 1. SAR/MTI entered MS-B in Sep 01 and will award a sole source System Development and Demonstration (SDD) contract for the Design/Modification and Integration into the TUAV in 3Q FY-02. Upon successful DT/Flight Test and MS-C decision, LRIP option will be exercised to establish initial production base in FY-04. After a successful OT (using SDD Test articles), Full Rate Production will begin with deliveries in FY-06.

2. Advanced EO/IR Payload will be pursued for the TUAV. In FY-02, this program will codify requirements, demonstrate the Advanced EO/IR capability, and conduct feasibility assessments for Laser Designator capabilities. In FY-03 award an SDD contract for the Design/Modification and Integration into the TUAV. Upon successful DT and MS-C decision, LRIP option will be exercised for articles to support deliveries in FY-05. Incorporate increased capabilities through a block upgrade approach (Laser, Countermine, etc) as the technology matures and is operational proven and demonstrated.

3. Communication Relay Payload development is being conducted by PM Tactical Radio Communication System (TRCS). This program office will support that development effort by developing the A-Kit (Integration Kit) for the CRP integration into the TUAV.

| **D. Schedule Profile** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| MS B/ SDD Decision for SAR/MTI | 4Q | | | | | | |
| Perform SAR/MTI Military Utility Assessment | | 2-4Q | | | | | |
| Award SAR/MTI SDD Contract | | 3Q | | | | | |
| Continue SAR/MTI Development and DT preparation. | | | 1-4Q | | | | |
| DT Test Article Deliveries and Testing (Limited User Test to support MS C) | | | 4Q | 1Q | | | |
| MS C/LRIP Option Exercise for SAR/MTI | | | | 2Q | | | |
| OT for SAR/MTI | | | | 4Q | | | |
| Delivery of LRIP SAR/MTI Systems | | | | | 2-4Q | | |
| Award FRP Contract for SAR/MTI | | | | | 2Q | | |
| FRP Deliveries to TUAV | | | | | | 3-4Q | |
| Conduct Operational Capabilities Assessment for Advanced EO/IR | | 2-4Q | | | | | |

| **D. Schedule Profile (continued)** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| Laser Designator Technical Feasibility Study | | 2-3Q | | | | | |
| MS B for Advanced EO/IR | | 4Q | | | | | |
| Contract Award for Advanced EO/IR SDD | | | 2Q | | | | |
| Complete DT for Advanced EO/IR | | | | 1-2Q | | | |
| MS C and exercise LRIP Option for Advanced EO/IR | | | | 2-3Q | | | |
| OT for Advanced EO/IR | | | | 4Q | | | |
| Advanced EO/IR LRIP Deliveries | | | | | 2-4Q | | |
| Advanced EO/IR FRP Contract Award | | | | | 3Q | | |
| Advanced EO/IR FRP Deliveries | | | | | | 3-4Q | |
| MS A for LIDAR | | 4Q | | | | | |
| Initiate Component Advanced Development | | | 1-3Q | | | | |
| Conduct Operational Capabilities Assessment for LIDAR | | | 4Q | | | | |
| MS B for LIDAR | | | | 1Q | | | |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**11A**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . SAR/MTI Program | SS/CPIF | Northrop-Grumman Baltimore, MD | 0 | 0 | | 8700 | 3Q | 7400 | 1Q | 4750 | 20850 | 20850 |
| b . Advanced EO/IR Operational Capabilities Assessment | MIPR | CECOM NVESD Ft. Belvoir, VA | 0 | 0 | | 734 | 2Q | 0 | | 0 | 734 | 2400 |
| c . CRP A-Kit Development | MIPR | TBS | 0 | 0 | | 300 | 2Q | 0 | | 0 | 300 | 300 |
| d . Advanced Payload Modeling and Simulation (Countermine) | FFP | TBS | 0 | 0 | | 0 | | 350 | 2Q | 100 | 450 | 450 |
| e . Miniaturized Light Detection and Ranging Sensor Package | TBS | TBS | 0 | 0 | | 0 | | 3000 | 2Q | Continue | Continue | Continue |
| f . Advanced EO/IR Program | COMP/CPFF | TBS | 0 | 0 | | 0 | | 6700 | 2Q | 6550 | 13250 | 13300 |
| g . Advanced Payload Development (Laser, Hyperspectral, Countermine) | TBS | TBS | 0 | 0 | | 0 | | 0 | | 5160 | 5160 | 5160 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 9734 | | 17450 | | Continue | Continue | Continue |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**11A**

| II. Support Cost | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Engineering Support | CPFF/PWD | Various | 0 | 0 | | 1500 | 1-4Q | 1700 | 1-4Q | 3400 | 6600 | 6600 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 1500 | | 1700 | | 3400 | 6600 | 6600 |

| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Test Bed/Data Link/Ground Display/Lease/Engineering Support | TBS | TBS | 0 | 0 | | 0 | | 1300 | 2Q | 2440 | 3740 | 3740 |
| b . SAR/MTI DT Support | TBS | TBS | 0 | 0 | | 0 | | 300 | 4Q | 1000 | 1300 | 1300 |
| c . SAR/MTI OT Support | TBS | TBS | 0 | 0 | | 0 | | 300 | 4Q | 1000 | 1300 | 1300 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 0 | | 1900 | | 4440 | 6340 | 6340 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**11A**

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Program Mgt Personnel | In House | PM UAV Payloads, Ft. Monmouth, NJ | 0 | 0 | | 200 | 1-4Q | 200 | 1-4Q | 400 | 800 | 800 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 200 | | 200 | | 400 | 800 | 800 |
| Project Total Cost: | | | 0 | 0 | | 11434 | | 21250 | | Continue | Continue | Continue |

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **7 - Operational system development** | **0305204A - Tactical Unmanned Aerial Vehicles** | **123** |

| COST (In Thousands) | | FY 2001 Actual | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 123 | JOINT TECHNOLOGY CENTER SYSTEM INTEGRATION (JMIP) | 2265 | 2287 | 2301 | 2296 | 2293 | 2350 | 2347 | 0 | 16139 |

**A. Mission Description and Budget Item Justification:** The Joint Technology Center/System Integration Laboratory (JTC/SIL) is a joint facility that develops, integrates and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development (i.e. TUAV Tactical Unmanned Control System (TUCS), TUAV Institutional Mission Simulation (IMS) Trainer, TUAV C4I module), modeling and simulation support. The MUSE develops real-time, operator in-the-loop simulations that are capable of tactical Hardware-In-the-Loop (HWIL) interoperability for multiple intelligence systems, that may be integrated with larger simulations in support of Service training and exercises. MUSE provides a realistic operational environment, supporting a wide range of C4I applications. This project funds the management of the JTC/SIL and MUSE enhancements.

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

**FY 2001 Accomplishments:**

- 143 Initiate Moving Target Indicator/Fixed Target Indicator (MTI/FTI) Sensor Simulation Development/Upgrade Synthetic Aperture Radar (SAR) Simulation
- 240 MUSE Remote Support Capability
- 75 Provide Direct Joint Surveillance Target Attack Radar System (JSTARS) Common Ground Station (CGS) Interface
- 235 Develop MUSE Fixed Target Damage State Visualization
- 75 Technical Support of MUSE Integration with Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT)
- 119 Upgrade High Level Architecture (HLA) Certification and DOD Information Technology Security Certification & Accreditation Process (DITSCAP)
- 237 MUSE Hardware Consolidation into Single PC-Based Platform
- 83 Develop and Upgrade Terrain and Target Databases
- 155 Initiate MUSE TUAV Flight Performance Model Verification and Validation Process

**FY 2001 Accomplishments: (Continued)**

- 160 Provide MUSE Configuration Management and Help Desk Services
- 542 MUSE Equip ment
- 201 JTC/SIL Management

Total 2265

**FY 2002 Planned Program**

- 150 Develop and integrate Tactical Common Data Link into MUSE in support TUAV ORD
- 240 Develop and upgrade Terrain and Target databases
- 175 MUSE Remote Support Capability
- 120 Upgrade HLA Certification and DITSCAP
- 50 Technical support of MUSE integration with IEWTPT
- 190 MUSE TUAV Flight Performance Model Verification and Validation Process
- 300 MUSE Configuration Management and Help Desk Services
- 785 MUSE Equipment
- 277 JTC/SIL Management

Total 2287

**FY 2003 Planned Program**

- 200 Incorporate new technology sensors and platforms into the MUSE
- 290 Develop and Upgrade Terrain and Target Databases
- 125 Integrate Weapon Employment Capabilities into MUSE
- 50 Technical support of MUSE integration with IEWTPT
- 105 Evaluate and integrate New Visualization Technologies into MUSE

**FY 2003 Planned Program (Continued)**

- 120 Upgrade HLA Certification and DITSCAP
- 120 MUSE TUAV Flight Performance Model and Verification and Validation Process
- 240 MUSE Configuration management and Help Desk Services
- 758 MUSE Equipment
- 293 JTC/SIL Management

Total 2301

**B. Other Program Funding Summary:** Not applicable for this item.

Other Air Force and Navy funds are provided for the development of JTC/SIL MUSE.

**C. Acquisition Strategy:** Continued MUSE development will be accomplished through a combination of Government in-house functional directorate support and contractor support using a variety of existing RDEC contract vehicles and the OMNIBUS 2000 contract.

| D. Schedule Profile | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| JTC/SIL MUSE Enhancement and Management | 2-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**123**

| I. Product Development | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Initiate MTI/FTI Sensor Sim Develop/Upgrade SAR | SS/CPFF | AMC/AMCOM/AMRDEC/SED/Redstone Arsenal, AL | 0 | 143 | 3Q | 0 | | 0 | | 0 | 143 | 143 |
| b . MUSE Remote Support Capability | SS/CPFF | GDIS/Arlington, VA | 0 | 240 | 3Q | 175 | 1Q | 0 | | 0 | 415 | 415 |
| c . Develop MUSE Fixed Target Damage Site Visualization | SS/CPFF | GDIS/Arlington, VA | 0 | 235 | 3Q | 0 | | 0 | | 0 | 235 | 235 |
| d . Upgrade HLA Certification for DITSCAP | SS/CPFF | AMC/AMCOM/AMRDEC/SED/Redstone Arsenal, AL | 0 | 119 | 3Q | 120 | 1Q | 120 | 1Q | 318 | 677 | 677 |
| e . MUSE Equipment | C/FFP | Various | 0 | 432 | 3Q | 627 | 1Q | 608 | 1Q | 1611 | 3278 | 3278 |
| f . MUSE Hardware Consolidation into Single PC-Based Platform | SS/CPFF | GDIS/Arlington, VA | 0 | 237 | 3Q | 0 | | 0 | | 0 | 237 | 237 |
| g . Develop & Integrate TCDL into MUSE in Support of TUAV ORD | SS/CPFF | GDIS/Arlington, VA | 0 | 0 | | 150 | 1Q | 0 | | 0 | 150 | 150 |
| h . Develop & Upgrade Terrain & Target Databases | SS/CPFF | Quality Research Institute/HSV, AL | 0 | 83 | 4Q | 240 | 1Q | 290 | 1Q | 768 | 1381 | 1381 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**123**

| I. Product Development (continued) | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| i . Incorporate New Technology Sensors & Platforms into MUSE | SS/CPFF | GDIS/Arlington, VA | 0 | 0 | | 0 | | 100 | 1Q | 1324 | 1424 | 1424 |
| j . Integrate Weapon Employment Capabilities into MUSE | C/FFP | TBD | 0 | 0 | | 0 | | 125 | 1Q | 596 | 721 | 721 |
| k . Evaluate and Integrate New Visualization Technologies into MUSE | C/FFP | TBD | 0 | 0 | | 0 | | 105 | 1Q | 530 | 635 | 635 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 1489 | | 1312 | | 1348 | | 5147 | 9296 | 9296 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**123**

| II. Support Cost | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Provide Direct JSTARS CGS Interface | SS/CPFF | GDIS/Arlington, VA | 0 | 75 | 3Q | 0 | | 0 | | 0 | 75 | 75 |
| b . Technical Support of MUSE Integration with IEWTPT | C/CPFF | GDIS/Arlington, VA | 0 | 75 | 3Q | 50 | 1Q | 50 | 1Q | 132 | 307 | 307 |
| c . Initiate MUSE TUAV Flight Performance Model V&V Process | C/CPFF | Dynetics/Huntsville, AL | 0 | 155 | 3Q | 190 | 1Q | 120 | 1Q | 530 | 995 | 995 |
| d . Provide MUSE Configuration Mgt and Help Desk Services | C/CPFF | GDIS, Arlington, VA | 0 | 160 | 3Q | 300 | 1Q | 240 | 1Q | 795 | 1495 | 1495 |
| e . JTC/SIL Management | C/CPFF | TBD | 0 | 0 | | 60 | 1Q | 60 | 1Q | 238 | 358 | 358 |
| f . MUSE Equipment | C/CPFF | AMC/AMCOM/AMRDEC/SED/Redstone Arsenal, AL | 0 | 110 | 3Q | 158 | 1Q | 150 | 1Q | 424 | 842 | 842 |
| g . Incorporate New Technology Sensors & Platforms into MUSE | C/CPFF | SAIC/Huntsville, AL | 0 | 0 | | 0 | | 100 | 1Q | 530 | 630 | 630 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 575 | | 758 | | 720 | | 2649 | 4702 | 4702 |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**7 - Operational system development**

PE NUMBER AND TITLE
**0305204A - Tactical Unmanned Aerial Vehicles**

PROJECT
**123**

| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . Product Evaluation | TBD | TBD | 0 | 0 | | 0 | | 0 | | 132 | 132 | 132 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 0 | | 0 | | 132 | 132 | 132 |

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a . JTC/SIL Management Personnel | In House | JTC/SIL/Redstone Arsenal, AL | 0 | 201 | 2-4Q | 217 | 1-4Q | 233 | 1-4Q | 1324 | 1975 | 1999 |
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 201 | | 217 | | 233 | | 1324 | 1975 | 1999 |
| Project Total Cost: | | | 0 | 2265 | | 2287 | | 2301 | | 9252 | 16105 | 16129 |