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

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE
4 - Demonstration/validation	**0603305A - Army Missile Defense Systems Integration**

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		0	0	27887	68837	68840	54130	44043	0	263737
TR3	MOBILE TACTICAL HIGH ENERGY LASER (MTHEL)	0	0	3492	39780	39683	24762	9876	0	117593
TR4	MISSILE DEFENSE INTEGRATION	0	0	8120	12010	12117	12059	12148	0	56454
TR5	MISSILE DEFENSE BATTLELAB	0	0	13105	13298	13602	13784	18511	0	72300
TR6	ARMY AIR AND MISSILE DEFENSE	0	0	3170	3749	3438	3525	3508	0	17390

A. Mission Description and Budget Item Justification: This program element funds missile defense systems integration efforts for both the Army Space and Missile Defense Command (SMDC) and the Program Executive Office for Air and Missile Defense (PEO-AMD).

Mobile Tactical High Energy Laser: This project funds a chemical laser weapon system assessment and hardware development effort for the Army Transformation.

SMDC: HQDA General Order No. 5, 1 March 1998, designated the US Army Space and Missile Defense Command (USASMDC) the specified proponent for space and National Missile Defense (NMD), and the operational integrator for Theater Missile Defense (TMD). In response to this designation, the Missile Defense Battle Integration Center (MDBIC) and other existing USASMDC elements were reorganized and merged to form the Space and Missile Defense Battle Lab (SMDBL). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. The reorganization also created the Force Development and Integration Center (FDIC), a major support element of USASMDC. This program element funds the FDIC, created to execute the specified proponency role of the USASMDC. The FDIC develops space and NMD solutions to Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers (DTLOMS) and executes their implementation. This program element funds the production of requirements for hardware and software solutions, the interfaces with technology development, and the development of operational and system architectures for space, NMD and TMD. In addition, this program element funds analysis and experimentation integrating the pillars of TMD (active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions) and inputting Army TMD requirements into Joint forums. This program also supports Aviation and Artillery attack operation systems, and passive missile defense materiel solutions. This Program also supports the Technical and Integration of the Army's Single Integrated Air Picture (SIAP).

PEO-AMD: The mission of the United States Army Program Executive Office for Air and Missile Defense (PEO AMD) is to develop, acquire, and field Theater Air and Missile Defense (TAMD) systems. These systems provide the capabilities needed to defend friendly forces and assets against attack by enemy aircraft, cruise missiles, and theater ballistic missiles (TBMs). The Army is developing and procuring individual TAMD weapon systems that must be integrated to form a Family of Systems (FoS).

It is the PEO's responsibility to ensure the Army TAMD FoS is developed as an integrated capability. The PEO must integrate Army and Joint requirements in order to satisfy both needs. The PEO must support interoperability systems engineering, simulation, analysis, and evaluation in order to integrate the Family of Systems. Funding will allow the PEO to sufficiently address both Army and Joint interoperability requirements, ensuring an effective Army TAMD FoS.

This program supports the Legacy to Objective transition path of the Tranformation Campaign Plan.

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	0	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	27887
Current Budget Submit (FY 2003 PB)	0	0	27887

FY03 increases due to re-alignment of funding from PE 0603308A.

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

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration/validation	**0603305A - Army Missile Defense Systems Integration**	**TR3**

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
TR3	MOBILE TACTICAL HIGH ENERGY LASER (MTHEL)	0	0	3492	39780	39683	24762	9876	0	117593

A. Mission Description and Budget Item Justification: This project funds weapon system assessment and hardware development effort for the Army Transformation applications based on mature chemical laser technologies and available HEL beam control subsystems and integrates them into a mobile platform. This effort will leverage the successful components of the Tactical High Energy Laser Advanced Concept Technology Demonstration (THEL ACTD), which is based on deuterium fluoride chemical laser (DFCL) technologies, and will include demonstrated chemical oxygen laser (COIL) technologies; acquisition, pointing, and tracking system; and battle management systems. The MTHEL development effort is a continuation of the combined US/Israel THEL program, which was initiated in Jul 96 to evaluate the effectiveness of THELs to negate the threat posed to population areas by short range Katyusha rockets. The THEL ACTD was successfully completed in Oct 00 and is currently in the two year ACTD residual testing phase at the High Energy Laser Systems Test Facility (HELSTF). The demonstrated effectiveness of the fixed site THEL demonstrator led to the initiation of a system engineering trade study in FY01 to transition to mobile THEL variants that meet both Israeli and US Army mission needs. The mission of the MTHEL is based on a Combined Operational Requirement being developed by the US Army Air Defense School and the Israeli Air Force. The work in this program element is consistent with the Army Directed Energy Master Plan and the Army Modernization Plan. Work in this program element is related to and fully coordinated with efforts in PE 0605605 (DOD High Energy Laser Systems Test Facility) and PE 0602307A (Advanced Weapons Technology, Project 042 - High Energy Laser Technology) in accordance with the ongoing Reliance joint planning process and contains no unwarranted duplication of effort among the military departments. Work is performed by the US Army Space and Missile Defense Command (SMDC) in Huntsville, AL. This system supports the Legacy to Objective path of the Army Transformation Campaign Plan and introduces a new weapon demonstration system based on an identified key enabling transformation technology, high energy lasers, leading to a HEL system for the US Army warfighting arsenal.

FY 2003 Planned Program

- 3492 Continue System Engineering Assessment based on the MTHEL Combined Operational Requirements Document and lethality testing results. Major efforts will include: integrating mature chemical HEL technologies; modified THEL component and subsystem designs for pressure recovery, exhaust management, thermal management closed cycle operation, gain generation, vibration damping, beam control, etc.; and conduct lethality and propagation testing using both DF CL and COIL wavelengths from available sources to validate codes related to system engineering and performance specifications.

Total 3492

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

Israel provided $9.1M in FY 01 under the provisions of the THEL Memorandum of Agreement (MOA) to support this effort. Under the MTHEL system MOA, Israel is expected to match the majority of the Army's MTHEL funding on a 50/50 basis.

C. Acquisition Strategy: The MTHEL acquisition strategy is to assess chemical laser technologies in FY 02 and FY 03 in System Engineering Trade Studies and lethality testing, and then select those technologies that will be integrated into a fully mobile tactical high energy laser system beginning in FY 04. The fabrication, integration, and functional testing of the MTHEL is expected to take approximately 3 years, followed by one to three years of demonstration/validation testing at the High Energy Laser Systems Test Facility to enable the Army to effectively address key doctrinal, training, operational tactics, techniques, and procedures, logistics, etc. for developing, fielding, integrating and deploying a HEL weapon system into the US Army arsenal.

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Conduct Assessment of DF & COIL Technologies			1-4Q				
Initiate Long Leads & Fabrication			1-4Q				
Complete Fabrication/Integration				1-4Q	1-4Q	1-4Q	
Complete Functional Testing						1-4Q	
Complete Field Testing at HELSTF							1-4Q

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603305A - Army Missile Defense Systems Integration

PROJECT
TR3

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 . Tech Assessment	TBD	TBD	0	0		0		3000	1-4Q	Continue	Continue	0
Subtotal:			0	0		0		3000		Continue	Continue	0

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 . Tech Assessment	SETAC	TBD/Hsv, AL	0	0		0		492	1-4Q	Continue	492	0
Subtotal:			0	0		0		492		Continue	492	0

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603305A - Army Missile Defense Systems Integration

PROJECT
TR3

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
Subtotal:			0	0		0		0		0	0	0

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
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			0	0		0		3492		Continue	Continue	0

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
TR4	MISSILE DEFENSE INTEGRATION	0	0	8120	12010	12117	12059	12148	0	56454

A. Mission Description and Budget Item Justification: HQDA General Order No. 5, 1 March 1998, designated the US Army Space and Missile Defense Command (USASMDC), the specified proponent for space and National Missile Defense (NMD), and the operational integrator for Theater Missile Defense (TMD). Existing USASMDC elements were reorganized and merged to form the Force Development and Integration Center (FDIC). This project funds the SMDI efforts required to execute the specified proponency role of USASMDC through development of Space and Missile Defense (SMD) solutions to Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers (DTLOMS) and their implementation. This project funds the production of hardware and software solutions, interfaces with technology development, and development of operational and system architectures. Additionally, this project funds analysis and experimentation integrating the pillars of MD (active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions) and inputting Army TMD requirements into Joint forums. These products are required to accomplish the integrated MD mission and exceed the scope of other programs.

Additionally the Office of Technical Integration and Interoperability (OTII) was established in July 2000 to serve as the Command's lead for Army Single Integrated Air Picture (SIAP) initiatives and perform the critical function of identifying technology efforts within DoD and industry to focus and leverage ongoing and projected technology initiatives in space and missile defense. This project funds the coordination of SIAP requirements with the operational community: verification that operational requirements exist to support technical specifications and any subsequent changes; integration and coordination of army operational requirements for SIAP with the user community; determination of which implementation options/roadmaps provide the maximum warfighting benefits; development of the operational view within the Theater Air and Missile Defense (TAMD) integrated architecture; identification of existing and/or required modeling and simulation capabilities to support SIAP; and integration of hardware-in-the-loop and associated assessments and analysis. These products/tasks are required to ensure a specific, focused effort that integrates SIAP with weapons, sensors, BMC3 and concepts of operations. This program also supports Aviation and Artillery attack operation systems and passive missile defense materiel solutions. This project supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

FY 2003 Planned Program

- 5326 Continue efforts to plan, develop, and execute concepts and DTLOMS solutions for space and NMD. Represent users of space and NMD in development of operational and training requirements, testing, and evaluation, including Space-based Infrared System (SBIRS), M3P/JTAGS, and space control capabilities. Lead Army's efforts in developing and executing Joint Missile Defense (JTMD) architecture. Develop space and MD modernization strategy beyond the 2010 time frame. Sponsor exploration of future space and missile defense warfighting efforts.

FY 2003 Planned Program (Continued)

- 2794 Continue efforts for coordinating SIAP requirements with TRADOC Deputy Combat Developers (DCDs) to consolidate SIAP operational requirements across all four pillars, integrating SIAP requirements into current and evolving doctrine, identifying SIAP demonstrations and experiments that showcase Army interoperability, coordinating Army participation in TAMD joint interoperability exercises/demonstrations, assessing the models and simulations that support SIAP and developing the Army position on SIAP- related tools and supporting SIAP Task Force initiatives in resolving Joint Data Network (JDN) fixes.

Total 8120

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

C. Acquisition Strategy: Not applicable for this item.

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Continue development/synchronization of space and NMD DTLOMS solutions & TMD integration.			1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue to develop technical interoperability solutions for Integrated MD requirements.			1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603305A - Army Missile Defense Systems Integration

PROJECT
TR4

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
Subtotal:			0	0		0		0		0	0	0

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 . Govt support & support contracts	Various	Various	0	0		0		8120		0	8120	0
Subtotal:			0	0		0		8120		0	8120	0

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603305A - Army Missile Defense Systems Integration

PROJECT
TR4

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
Subtotal:			0	0		0		0		0	0	0

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
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			0	0		0		8120		0	8120	0

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

February 2002

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration/validation	**0603305A - Army Missile Defense Systems Integration**	**TR5**

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
TR5	MISSILE DEFENSE BATTLELAB	0	0	13105	13298	13602	13784	18511	0	72300

A. Mission Description and Budget Item Justification: This project funds the delivery of space and missile defense innovations to the warfighter through prototyping, operational analysis, and experimentation to integrate space and missile defense into the Legacy, Interim, and Objective Forces and to address interoperability issues.

FY 2003 Planned Program

- 8826 Participate in Integration, Experiments and Exercises - Total Defender, Millennium Challenge, Future Operational Capability Operations Center Technology, Advanced Prototype Development. Millennium Challenge, Olympic Challenge, FCC2, Space Control, Hardware/Doftware Integration, advanced prototypes and concepts Development.
- 4279 Conduct Operational Analysis. Models, Sims, Assessment Tools - Brigade & Corps level operational analysis of space and missile defense related issues; space representation into existing models & simulations; maintenance of analysis M&S tools.

Total 13105

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

C. Acquisition Strategy: Not applicable for this item.

D. Schedule Profile: Not applicable for this item.

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
4 - Demonstration/validation

PE NUMBER AND TITLE
0603305A - Army Missile Defense Systems Integration

PROJECT
TR5

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
Subtotal:			0	0		0		0		0	0	0

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 . Experiments, Exercises, Enhancements, Maintenance analysis	CPAFF/CPFF	Various, AL & CO	0	0		0		7521		0	7521	0
b . Govt Support and Support Contracts	MIPR	Various, AL & CO	0	0		0		5584		0	5584	0
Subtotal:			0	0		0		13105		0	13105	0

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BUDGET ACTIVITY
4 - Demonstration/validation

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PROJECT
TR5

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
Subtotal:			0	0		0		0		0	0	0

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
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			0	0		0		13105		0	13105	0

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration/validation	**0603305A - Army Missile Defense Systems Integration**	**TR6**

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
TR6	ARMY AIR AND MISSILE DEFENSE	0	0	3170	3749	3438	3525	3508	0	17390

A. Mission Description and Budget Item Justification: The Joint Distributed Engineering Plant (JDEP) is a Navy proposed concept expanding their land-based Distributed Plant which assesses integration and interoperability problems (air and missile defense) of the fleet. This program will be used to evaluate interoperability of joint forces, test and evaluate interoperability of new acquisition systems, and engineering hardware and software to correct deficiencies and develop new capabilities. The initial focus of this program is directed toward integrated air defense. The program consists of individual combat systems distributed throughout the US connected with ATM/T1 telecommunication network(s) and distributed interactive simulation (DIS) protocols. The JDEP management structure consists of service execution cells. This funding provides for the Army involvement in the overall JDEP program. This effort supports the legacy to objective transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

No funding received in FY01

FY 2002 Planned Program

Funding for FY02 contained in PE 0603308A, Proj 99A

FY 2003 Planned Program

- 1843 JDEP test Event Participation
- 730 Communications Equipment
- 597 Operational Center Support: Provides support during JDEP testing and pre-event simulations

Total 3170

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

C. Acquisition Strategy: Not applicable for this item.

D. Schedule Profile: Not applicable for this item.

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TR6

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
Subtotal:			0	0		0		0		0	0	0

Remarks: Fy02 costs are reflected in PE 0603308A, Proj 99A

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 . Govt support, contractor support and communications support	MIPR, 1095	Various	0	0		0		1836	1-4Q	0	1836	0
Subtotal:			0	0		0		1836		0	1836	0

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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 . Government support and equipment costs	1095, MIPR	Various Government Agencies	0	0		0		1334	1-4Q	0	1334	0
Subtotal:			0	0		0		1334		0	1334	0

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
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			0	0		0		3170		0	3170	0