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

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		0	37233	51547	51802	37206	76891	154362	269031	Continuing	Continuing
TR3	MOBILE TACTICAL HIGH ENERGY LASER (MTHEL)	0	3275	39118	39010	24295	59396	141123	255694	Continuing	Continuing
TR4	MISSILE DEFENSE INTEGRATION	0	18695	0	0	0	0	28	35	0	8120
TR5	MISSILE DEFENSE BATTLELAB	0	12290	12429	12792	12911	17495	13211	13302	Continuing	Continuing
TR6	ARMY AIR AND MISSILE DEFENSE	0	2973	0	0	0	0	0	0	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. Low rate initial production (LRIP) scheduled to start approximatly FY10.

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) through FY03. FY04 and beyond, the SIAP effort has been moved to a new Program Element, 0603327A.

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 (TCP).

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	0	27887	68837	68840
Current Budget (FY 2004/2005 PB)	0	37233	51547	51802
Total Adjustments	0	9346	-17290	-17038
Congressional program reductions				
Congressional rescissions		-939		
Congressional increases		11600		
Reprogrammings		-242		
SBIR/STTR Transfer		-1073		
Adjustments to Budget Years			-17290	-17038

FY04/05 decreases due to realignment of funding to PEs 0603308A (project 990) and 0603327A, the new PE for Air and Missile Defense Systems Engineering.

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

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	**0603305A - Army Missile Defense Systems Integration**	**TR3**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
TR3	MOBILE TACTICAL HIGH ENERGY LASER (MTHEL)	0	3275	39118	39010	24295	59396	141123	255694	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds weapon system prototype assessment and hardware development/integration effort for the Army Transformation applications. The Mobile Tactical High Energy Laser (MTHEL) development and integration effort is a follow-on to the combined US/ Israel Tactical High Energy Laser Advanced Concept Technology Demonstration (THEL ACTD) program. The THEL ACTD was initiated in Jul 96 to evaluate the effectiveness of THELs to negate the threat posed to population areas by short range Katyusha rockets, and was successfully completed in Oct 00. The THEL demonstrator is a complete fixed site weapon system which includes an HEL beam generator, based on deuterium fluoride chemical laser (DFCL) technologies; an acquisition, pointing, and tracking system; and battle management systems, including an organic fire control radar. The THEL device is currently being used as an MTHEL risk reduction testbed 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 Common Operational Requirement developed by the US Army Air Defense School and the Israeli Air Force. Low rate initial production (LRIP) is scheduled to start approximately FY10. 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 0603308A (Army Missile Defense Systems Integration (DEM/VAL), PE 0605605 (DOD High Energy Laser Systems Test Facility) and PE 0602307A (Advanced Weapons Technology, Project 042 - High Energy 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 (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
o Assess MTHEL Common Operational Requirements Document and Lethality testing results. Major efforts include: o Modify THEL component and subsystem designs for pressure recovery, exhaust management, thermal management closed cycle operation, gain generation, vibration damping, beam control, etc. for MTHEL application o Conduct Lethality and propagation testing to validate codes related to system engineering and performance specifications o Integrate mature chemical HEL component technologies into weapon prototype design	0	3275	0	0
o Conduct risk reduction and design verification testing oConduct static and dynamic lethality tests against extended threat set o Select components and complete prototype preliminary design and evaluation o Complete prototype final design. oConduct static and dynamic lethality tests against extended threat set o Complete prototype final design o Conduct static and dynamic lethality tests against extended threat set o Conduct long lead item acquisition and begin fabrication	0	0	39118	39010
Total	0	3275	39118	39010

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

Israel provided $10M under a Foreign Military Sales Case in FY 02 to support this effort. Under the terms of an amendment (yet to be negotiated) to the THEL ACTD Memorandum of Agreement for MTHEL, Israel is expected to match the majority of the Army's MTHEL funding on a 50/50 basis. In FY03, Congress added $15M for the MTHEL effort in PE 0603308A, which will initiate risk reduction/design verification testing and static dynamic lethality tests against an extended threat set using the existing MTHEL testbed at HELSTF.

C. Acquisition Strategy: The MTHEL acquisition strategy is to assess chemical laser technologies in FY02 and FY03 in System Engineering Trade Studies and lethality testing, and then select those demonstrated technologies that will be integrated into a fully mobile tactical high energy laser system beginning in FY04. 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.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . MTHEL Development	CPAF	TBD	7200	2783	1Q	35338	1Q	35327	1Q	Continue	80648	0
Subtotal:			7200	2783		35338		35327		Continue	80648	0

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Management	CPFF	SMDC PEOAMD/Hsv, AL	0	300	1Q	1500	1Q	1500	1Q	Continue	Continue	0
Subtotal:			0	300		1500		1500		Continue	Continue	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Multiple	Various	Various	0	192	1Q	2280	1Q	2183	1Q	Continue	Continue	0
Subtotal:			0	192		2280		2183		Continue	Continue	0
Project Total Cost:			7200	3275		39118		39010		Continue	Continue	0

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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

PROJECT
TR3

Schedule Detail	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Conduct Assessment of DF & COIL Technologies	2-4Q	1-4Q						
Initiate Long Leads & Fabrication	2-4Q	1-4Q						
Complete Fabrication/Integration		1-4Q	1-4Q	1-4Q	1-2Q			
Complete Functional Testing					1-4Q			
Complete Field Testing at HELSTF					1-4Q	1-4Q	1-2Q	

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

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Advanced Component Development and Prototypes	**0603305A - Army Missile Defense Systems Integration**	**TR5**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
TR5	MISSILE DEFENSE BATTLELAB	0	12290	12429	12792	12911	17495	13211	13302	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds the delivery of space, missile defense and computer network operations (CNO) 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. This effort supports legacy to objective transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Space and Missile Defense Experiments/Advanced Prototype Components into Command and Control (C2) Systems-Participate in major Army and Joint Experiments integrating space, missile defense, and CNO technologies and organizational/operational concepts into the Army's TCP. Assess Space and Missile Defense impacts on doctrine and materiel. Over 15 experiments including: Unit of Action, Millennium Challenge (MC02), Roving Sands, Total Defender and Army Transformation Exp 02. Insert state of the art BMC4I into experiments using the Future Operational Capability Tactical Operations Center (FOC TOC). This effort was funded in PE 0603308A prior to FY03.	0	7315	7397	7613
Operational Analysis/Tools, Modeling and Simulation (M&S)-Conduct operational analysis for Space, Missile Defense and CNO. Examples include: Space Control, Roving Sands, MCO2, Space to Transformation Force, and Brigade Operational Analysis. Tools, M&S include: federation of M&S for experimentation and operational assessments, space and missile defense systems, doctrine and capabilities placed into functional description of the battlespace, identification of space representation requirements for existing M&S, and the maintenance of analysis M&S tools. This effort was funded in PE 0603308A prior to FY03.	0	4975	5032	5179
Totals	0	12290	12429	12792

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

C. Acquisition Strategy: Not applicable for this item.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Experiments, Exercises, Enhancements, Maintenance analysis	CPAFF/CPFF	Various, AL & CO	0	5427		5360		5511		Continue	16298	0
b . Govt Support and Support Contracts	MIPR/Allot	Various, AL , CO & NM	0	6863		7069		7281		Continue	21213	0
Subtotal:			0	12290		12429		12792		Continue	37511	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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

PROJECT
TR5

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 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 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			0	12290		12429		12792		Continue	37511	0

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes

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

PROJECT
TR5

Schedule Detail	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Conduct experiments, conduct operational analysis and maintain M&S tools for space & missile defense		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q