

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

June 2001

BUDGET ACTIVITY  
**7 - OPERATIONAL SYSTEMS DEV**

PE NUMBER AND TITLE  
**0203801A - Missile and Air Defense Prod Improvement Prog**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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	10933	12248	8547	0	0	0	0	0	0	0
036 PATRIOT PROD IMP PGM	7233	6635	4535	0	0	0	0	0	0	0
303 STINGER RMP PIP	3700	5613	4004	0	0	0	0	0	0	0
633 THAAD P3I	0	0	8	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification:**

**PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.**

The goal of the Air Defense Artillery (ADA) modernization is to provide well-trained soldiers with the most capable systems at the right time to defeat the evolving threat. The ADA systems support the Air and Missile Defense (AMD) force which assists the Army and the Joint Force in gaining Full Spectrum Dominance in any operational requirement. ADA must continually be upgraded and modernized to meet all challenges, from small scale contingencies to major theater wars (MTW). The FY02-03 budget funds critical improvements to the Patriot and Stinger programs.

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<u><b>B. Program Change Summary</b></u>	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	32211	12365	12078	0
Appropriated Value	32485	12365	0	
Adjustments to Appropriated Value	0	0	0	
a. Congressional General Reductions	0	0	0	
b. SBIR / STTR	-864	0	0	
c. Omnibus or Other Above Threshold Reductions	-133	0	0	
d. Below Threshold Reprogramming	-20153	0	0	
e. Rescissions	-141	-117	0	
Adjustments to Budget Years Since FY2001 PB	0	0	-3539	
Current Budget Submit (FY 2002/2003 PB )	11194	12248	8539	0

FY02 dollars realigned to PE 0603308 to more accurately reflect the purpose of the dollars.

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

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BUDGET ACTIVITY <b>7 - OPERATIONAL SYSTEMS DEV</b>				PE NUMBER AND TITLE <b>0203801A - Missile and Air Defense Prod Improvement Prog</b>					PROJECT <b>036</b>	
COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
036 PATRIOT PROD IMP PGM	7233	6635	4535	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification:** The Patriot Product Improvement Program upgrades the Patriot system through a series of individual materiel changes (MC) culminating in the attainment of the Patriot Advanced Capability - 3 (PAC-3) system. The communication upgrades improve Patriot's above and below battalion communication equipment. These changes eliminate Patriot-peculiar communications equipment and improve Patriot's interoperability between systems and the Services. FY00 was the first year for the Remote Launch Communication Enhancement Upgrade (RLCEU) Link 16 Phase 1 and Post Deployment Build 5 (PDB 5). RLCEU Link 16 will develop and test the hardware required for a Link-16 terminal, terminal control, and communications processing equipment to receive and process the Link 16 Joint Data Net information. PDB 5 will improve system capability against advanced threats (Theater Ballistic Missiles and Air-Breathing Threats (TBMs and ABTs) in all environments, to include clutter and/or intense Electronic Counter Measures (ECM). Program objective will be to define the software changes necessary to enhance system capabilities against advanced TBM and cruise missile threats. In addition, interoperability improvements [e.g., Cooperative Engagement Capability (CEC) interface, cueing, and Tactical Data Information Link (TADIL) direct to Fire Unit (FU)], PAC-3 missile integration improvements in ground software, Classification Discrimination & Identification (CDI3) enhancements, and on-line diagnostic evolution will be addressed. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

**FY 2000 Accomplishments**

- 2452 Initiated RLCEU Link 16 Phase I
  - 4781 Continued PDB 5
- Total 7233

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PROJECT

**036**

## FY 2001 Planned Program

- 2452 Continue RLCEU Link 16 Phase I
- 3986 Initiate Post PDB 5
- 197 Small Business Innovative Research/Small Business Technology Transfer

Total 6635

## FY 2002 Planned Program

- 4535 Continue Post PDB 5

Total 4535

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<b>B. Other Program Funding Summary</b>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Budget Activity 3 - Patriot Mod (C50700)	49630	22718	37617	0	0	0	0	0	0	0
Budget Activity 3 - Patriot Mod Initial Spares	3617	2625	731	0	0	0	0	0	0	0
Budget Activity 2 - PAC-3	0	0	676574	0	0	0	0	0	0	0

**C. Acquisition Strategy:** The design objective of the Patriot system was to provide a baseline system capable of modification to cope with the evolving threat. This alternative minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The Patriot program consists of two interrelated acquisition programs - the Patriot growth program and the PAC-3 missile program. Growth program modifications are grouped into configurations, which are scheduled to be fielded in the same timeframe. Configuration groupings are convenient for managing block changes of hardware and software and are not a performance-related grouping. However, incremental increases in performance will be determined for each configuration in order to provide benchmarks for configuration testing and for the development of user doctrine and tactics.

<b>D. Schedule Profile</b>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Configuration 3 Contractor Development Test & Evaluation				0	0	0	0	0
Configuration 3 Initial Operational Test & Evaluation				0	0	0	0	0
PDB-5 Software Improvements Continuation	1Q			0	0	0	0	0
Post PDB-5 Software Improvements Initiated		1Q		0	0	0	0	0
RLCEU Link 16 Phase I Program Initiated		1Q		0	0	0	0	0
RLCEU Link 16 Phase I Program Continuation		1-4Q		0	0	0	0	0
PAC-3 FUE-Ground	4Q			0	0	0	0	0
PAC-3 Missile MS III			4Q	0	0	0	0	0
PAC-3 Missile FUE		4Q		0	0	0	0	0

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

**June 2001**

**BUDGET ACTIVITY**  
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**PE NUMBER AND TITLE**  
**0203801A - Missile and Air Defense Prod Improvement**  
**Prog**

**PROJECT**  
**036**

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 . DAAH0182CA181		Raytheon/MA	3722	0		0		0	0	0	0	0
b . DAAH0187CA025		Raytheon/MA	22455	0		0		0	0	0	0	0
c . DAAH0189C0458		Raytheon/MA	23228	0		0		0	0	0	0	0
d . DAAH0192C0036		Raytheon/MA	5000	0		0		0	0	0	0	0
e . Small Contracts			1168	0		0		0	0	0	0	0
f . DAAH0187CA006		General Electric/FL	4824	0		0		0	0	0	0	0
g . DAAH0189C0167		Brunswick/Martin Marietta	3100	0		0		0	0	0	0	0
h . DAAH0192C0301	SS/CPFF	Lockheed-Martin/AL	4314	0		0		0	0	0	0	0
i . DAAH0191C0602	SS/CPIF	Raytheon/MA	23077	0		0		0	0	0	0	0
j . DAAH0192C0006	SS/CPAF	Raytheon/MA	56460	0		0		0	0	0	0	0
k . DAAH0195C0043	SS/CPAF	Raytheon/MA	16113	0		0		0	0	0	0	0
l . DAAH0196C0406		Lockheed Martin/AL	200	0		0		0	0	0	0	0
m . DAAH0196C0062		Raytheon/MA	62937	0		0		0	0	0	0	0

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

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Prog**

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**036**

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
n . DAAH0196C0018		Raytheon/MA	5046	0		0		0	0	0	0	0
o . Horiz Btlfld Digit			2768	0		0		0	0	0	0	0
p . DAAH0198CA001		Raytheon/MA	1200	0		0		0	0	0	0	0
q . DAAH0195CA046		Loral Vought/TX	20	0		0		0	0	0	0	0
r . DAAH0199C0028		Raytheon/MA	665	0		0		0	0	0	0	0
s . RLCEU Link 16 Phase I			0	1226		0		0	0	0	0	0
t . Post PDB 5			0	1607		1213		0	0	0	0	0
Subtotal:			236297	2833		1213		0		0	0	0

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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 . DAAH0187CA008		CAS, Inc/AL	2270	0		0		0	0	0	0	0
b . DAAH0190C0487		CAS, Inc/AL	6266	0		0		0	0	0	0	0
c . DAAH0194C0105	C/CPAF	CAS,Inc/AL	6135	0		0		0	0	0	0	0
d . DAAH0197C0324		CAS,Inc/AL	2934	0		0		0	0	0	0	0
e . In-House Support		RSA/AL	13303	858		800		0	0	0	0	0
f . Matrix Support		RSA/AL	2043	700		604		0	0	0	0	0
g . DAAH0197CA013		CAS,Inc/AL	100	0		0		0	0	0	0	0
Subtotal:			33051	1558		1404		0		0	0	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 . Missile Command	1095	RSA/AL	12586	1644		1500		0	0	0	0	0
b . White Sands Missile Range	MIPR	WSMR/NM	11740	600		418		0	0	0	0	0
c . Other Govt Agent	MIPR		10410	0		0		0	0	0	0	0
d . RDEC and Other Govt Agent	1095/MIPR	RSA/AL	95732	0		0		0	0	0	0	0
Subtotal:			130468	2244		1918		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:			399816	6635		4535		0		0	0	0
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BUDGET ACTIVITY <b>7 - OPERATIONAL SYSTEMS DEV</b>				PE NUMBER AND TITLE <b>0203801A - Missile and Air Defense Prod Improvement Prog</b>					PROJECT <b>303</b>	
COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
303 STINGER RMP PIP	3700	5613	4004	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification:** This project provides a product evolution of the Stinger-Reprogrammable MicroProcessor (RMP), improving countermeasure capabilities via externally loaded software downloaded from a reprogrammable module. This concept allows for timely upgrades to correct system deficiencies, rapid reaction to new threats or threat countermeasures, development of specialty software programs and accommodations for new missions. The Block I upgrade adds a roll sensor and enhanced software, solves system performance deficiencies in countermeasures and other engagement conditions, and increases terminal accuracy. The Block II development program was terminated in FY00 due to higher priority requirements of the Army Transformation. Critical evaluation of Block I design obsolescence, improvements, and performance will continue. This system supports the Legacy transition path of the Transformation Campaign Plan (TCP).

**FY 2000 Accomplishments**

- 3000 STINGER Block II Program Termination & Technology Transition
- 550 AIM9X & RAM Technology Evaluation (Producibility & Obsolescence Reduction)
- 150 Lithium Battery Evaluation (Shelf Life Extension)

Total 3700

**FY 2001 Planned Program**

- 3426 Hybrid Microelectronic Assembly (HMA) Redesign
- 910 Dual Detector Aging/Degradation Test, Evaluation, and Analysis
- 125 Lithium Battery Aging Test
- 275 Roll Frequency Sensor/Seeker Evaluation (Primary and Secondary Seeker Spin Motor and Squibs)
- 245 Guidance Section Software Redesign
- 470 Missile Airframe/Guidance Section Modeling and Simulation Analyses and Performance Predictions

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Improvement Prog**

PROJECT

**303**

## FY 2001 Planned Program (Continued)

- 162 Small Business Innovative Research/Small Business Technology Transfer Program

Total 5613

## FY 2002 Planned Program

- 3100 Roll Frequency Sensor/Seeker (RFSS) Redesign
- 904 Hybrid Microelectronic Assembly (HMA) Redesign

Total 4004

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<b>B. Other Program Funding Summary</b>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
Missile Procurement, Army	0	0	0	0	0	0	0	0	0	0
Budget Activity 2 - Stinger Msl (C18600)	0	0	45890	0	0	0	0	0	0	0
Budget Activity 3 - Stinger Mods (C21300)	21858	33033	5830	0	0	0	0	0	0	0

**C. Acquisition Strategy:** Special interest programs completed in this project in prior years include the MIL-STD Launcher electronics development, and support of a feasibility study as part of an eight-nation Memorandum of Understanding for NATO Very Short and Short Range Air Defense Systems. The Block I development program was a Sole Source/Cost Plus Incentive Fee contract awarded in 1992. The Block II development began in FY 1993 as a Technology Base Broad Agency announcement with a SS/CPFF contract. A SS/CPFF contract was awarded in 1996 for pre-Engineering, Manufacturing, and Development (EMD). Due to termination of the Block II development program, and redefinition of activities to evaluate Block I improvements and performance, a SS/CPFF contract for follow-on Stinger Block I improvements was awarded in 2Q FY2000.

<b>D. Schedule Profile</b>	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Block II Termination and Block I Contract Award for Technology Transition	2Q			0	0	0	0	0
AIM9X & RAM Technology Evaluation	2-4Q			0	0	0	0	0
Lithium Battery Evaluation/Test	4Q	4Q		0	0	0	0	0
HMA Redesign PDR/CDR		3Q		0	0	0	0	0
Dual Detector Evaluation		2-4Q		0	0	0	0	0
Roll Frequency Seeker Redesign CDR		4Q		0	0	0	0	0
Initiate Guidance Section Software Redesign		1-4Q		0	0	0	0	0
Modeling and Simulation Analyses/Performance Predictions		3-4Q		0	0	0	0	0
Complete RFSS Redesign			3-4Q	0	0	0	0	0
Complete HMA Redesign			3-4Q	0	0	0	0	0
Continue Technology Assessments/Performance Analysis of Components (Seeker, Servo, Pyrotechniques)				0	0	0	0	0
Seeker Head Redesign CDR				0	0	0	0	0

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

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**Prog**

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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 . DAAH0192C0213	SS-CPIF	Hughes, Tucson, AZ	20838	0		0		0	0	0	0	0
b . DAAH0193CR127	SS-CPFF	Hughes, Tucson, AZ	4629	0		0		0	0	0	0	0
c . DAAH0195C0028	SS-CPFF	Hughes, Tucson, AZ	1965	0		0		0	0	0	0	0
d . DAAH0196C0180	SS-CPFF	Hughes, Tucson, AZ	17739	0		0		0	0	0	0	0
e . DAAH0197C0084	SS-CPFF	Raytheon(Hughes), Tucson, AZ	1000	0		0		0	0	0	0	0
f . DAAH0197C0099	SS-CPFF	Raytheon, Tucson, AZ	4964	0		0		0	0	0	0	0
g . DAAH0199C0170 Block I Technology Evaluations	SS-CPFF	Raytheon, Tucson, AZ	1809	3879	3Q	3404	1Q	0	0	0	0	0
h . Block I Aggregate	Various	Various	8569	0		0		0	0	0	0	0
i . BSFV Aggregate	Various	Various	7025	0		0		0	0	0	0	0
j . Government Engineering Support	1095	RDEC, Redstone Arsenal, AL	7794	842	1Q	200	1Q	0	0	0	0	0
k . Other Govt. Agency	MIPR/1095	Various	413	112	2Q	200	2Q	0	0	0	0	0

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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
Subtotal:			76745	4833		3804		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 . DAAH0195CA032	SS-FFP	Sigma Tech, Huntsville,AL	1198	0		0		0	0	0	0	0
b . OSD MOU (Barclay Bank 42779277)	SS/C-FFP & 1080	United Kingdom Ministry of Defense	4090	0		0		0	0	0	0	0
Subtotal:			5288	0		0		0		0	0	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 . Test Demonstration	MIPR	Eglin AFB, FL	193	0		0		0	0	0	0	0
b . Test Targets	1095	Targets Management Office	2100	0		0		0	0	0	0	0
c . Telemeters	1095	RTTC, Redstone Arsenal, AL	1269	0		0		0	0	0	0	0
d . Test Instrumentation	MIPR	NSWC, Dahlgren, VA	30	0		0		0	0	0	0	0
e . Test Bed	MIPR	SMDC, Huntsville, AL	170	0		0		0	0	0	0	0
f . Block I Design Tests	MIPR	Various	0	169	3Q	0		0	0	0	0	0
Subtotal:			3762	169		0		0		0	0	0

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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 . Project Management	In-House	SHORAD PMO, DSA AMCOM	2034	349	1Q	200	1Q	0	0	0	0	0
b . Contracted Services	Various	Various	786	100	2Q	0		0	0	0	0	0
c . DLA90093D00121	SS-FFP	IITRI,Huntsville,AL	775	0		0		0	0	0	0	0
d . SBIR/STTR			0	162		0		0	0	0	0	0
Subtotal:			3595	611		200		0		0	0	0
Project Total Cost:			89390	5613		4004		0		0	0	0