

PE NUMBER: 0203801A

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PE TITLE: Missile/Air Defense Product Improvement Program

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

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	60882	30443	11252	32105	31034	50593	69885	Continuing	Continuing
D036 PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954
D038 Avenger Product Improvement Program	0	0	0	0	0	2103	0	0	2103
D303 Stinger RMP Product Improvement Program	15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing
D633 THAAD P3I	0	0	0	0	0	855	3438	Continuing	Continuing

**Mission Description and Budget Item Justification:** The changing global threat and the new Army Warfighting Doctrine developed to respond to this changing threat all significantly impact the mission of Air Defense Artillery (ADA). This doctrine calls for U.S. forces to be able to win two nearly simultaneous major regional conflicts and to conduct combat operations characterized by rapid response and a high probability of success while minimizing the risk of significant American casualties. ADA must continually be upgraded and modernized in accordance with the ADA missions. The FY 99 budget funds critical improvements to PATRIOT and Stinger. This project supports development of upgrades to current equipment and is appropriately funded in Budget Activity 7.

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

PROJECT

**D036**

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D036 PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954

**A. Mission Description and Justification D036 - PATRIOT Product Improvement Program:** The PATRIOT system is being upgraded 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 between the services.

**Acquisition Strategy:** The design objective of the PATRIOT system was to provide a baseline system capable of being modified 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 time frame. Configuration groupings are a convenience 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.

**FY 1997 Accomplishments:**

- 5341 P3I test program
  - 5667 Communications upgrades
  - 750 Responsive threat analysis
  - 33329 Anti-Cruise Missile upgrade
- Total 45087

**FY 1998 Planned Program:**

- 5515 P3I test program
  - 6198 Communication upgrade
  - 9473 Anti-Cruise Missile Upgrade
  - 512 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 21698

Project D036

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

PROJECT  
**D036**

**FY 1999 Planned Program:**

- 5899 P3I test program
  - 600 Responsive threat analysis
  - 2786 Horizontal Battlefield Digitization
- Total 9285

**B. Project Change Summary**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY 1998/1999 President's Budget	46280	12388	9474
Appropriated Value	46280	22388	
Adjustments to Appropriated Value	-1193	-690	
FY 1999 President's Budget	45087	21698	9285

Change Summary Explanation: Funding: FY 1998: Congressional increase for Patriot Anti-Cruise Missile (+10000); Undistributed Congressional reductions (-690 ).

**C. Other Program Funding Summary**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Complete</u>	<u>Total Cost</u>
Missile Procurement, Army									
Budget Activity 3 - PATRIOT Mod (C50700)	23283	7784	15259	26407	29338	19248	15366	180890	317575

**D. Schedule Profile**

	<u>FY 1997</u>			<u>FY 1998</u>			<u>FY 1999</u>					
	1	2	3	4	1	2	3	4	1	2	3	4
Post Deploy Build-4 Software Release	X*											
Configuration 2 First Unit Equipped	X*											
Configuration 3 Contractor Development						X						
Test & Evaluation												
Configuration 3 Initial Operational Test & Evaluation								X				
PDB-5 Software Release											X	
PAC-3 FUE											X	

\*Milestone completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

PROJECT  
D036

**A. Project Cost Breakdown**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Contract Engineering Support	40054	14585	3186
Program Management Support	1399	2581	1922
Developmental Test and Evaluation	3634	4532	4177
Total	45087	21698	9285

**B. Budget Acquisition History and Planning Information**

**Performing Organizations**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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**Product Development Organizations**

Raytheon										
DAAH0182CA181					3722					3722
DAAH0187CA025					22455					22455
DAAH0189C0458					23228					23228
DAAH0192C0036					5000					5000
Small Contracts										
General Electric										
DAAH0187CA006					4824					4824
Brunswick Corp.										
DAAH0189C0167					3100					3100
Martin Marietta										
DAAH0192C0301	SS/CPFF	15Jul92			3863					3863
Raytheon										
DAAH0191C0602	SS/CPIF	22Apr92			23077					23077
DAAH0192C0006	SS/CPAF	27Jan92			56460					56460
DAAH0195C0043	SS/CPAF	01Feb95			10098	1479	500	400		12477
Martin Lockheed										
DAAH0196C0406						200	450			650
Project D036					Page 4 of 11 Pages				Exhibit R-3 (PE 0203801A)	

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**RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

PROJECT  
**D036**

Contractor or Government Performing <u>Activity</u>	Contract Method/Type or Funding <u>Vehicle</u>	Award or Obligation <u>Date</u>	Performing Activity <u>EAC</u>	Project Office <u>EAC</u>					Budget to <u>Complete</u>	Total <u>Program</u>
					Total Prior to <u>FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
PAC 2 Anti-Cruise Raytheon RLCEU DAAH0196C0018 Link 16/Jt Tac Info Dis Sys JTIDS					33183	33329	9473			75985
Horiz Btlfld Digit Post PBD 5 RAM Improvements						5046	4162	5900		9208
									2786	2786
								56785		56785
								13000		13000
<b>Support and Management Organizations</b>										
CAS, Inc. DAAH0187CA008						2270				2270
DAAH0190C0487						6266				6266
DAAH0194C0105	C/CPAF	31Jan94				6135				6135
DAAH0197C0324							1099	791		1890
In-House Support					11327	1399	1482	1131		15339
<b>Test and Evaluation Organizations</b>										
Missile Command White Sands	1095				3420	694	1000	700		5814
Missile Range	1095/MIPR				4211	1591	1934	1737		9473
Other Govt Agen RDEC and Other Govt Agent	MIPR				4015	1349	1598	1740		8702
										95377
					95377					

**Government Furnished Property:** None.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

PROJECT  
D036

	Total Prior to <u>FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Budget to <u>Complete</u>	Total <u>Program</u>
Subtotal Product Development	190178	40054	14585	3186	75685	323688
Subtotal Support and Management	25998	1399	2581	1922		31900
Subtotal Test and Evaluation	107023	3634	4532	4177		119366
Total Project	323199	45087	21698	9285	75685	474954

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

PROJECT

**D303**

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D303 Stinger RMP Product Improvement Program	15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** This project provides a product evolution of the STINGER-RMP to improve countermeasures capability via externally loaded software, which is 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 where full capability may not be desired, and accommodation of new missions. The Block I upgrade project, which adds a roll sensor and enhanced software, extends the missile service life, solves the recognized system performance deficiencies in countermeasures and other engagement conditions, and increases terminal accuracy. The Block II program is a development of an advanced infrared (IR) Focal Plane Array Seeker which improves the performance of the missile against an expanded target and in background clutter. The program develops the improved missile for adaptation to any or all of the STINGER firing platforms, extends the missile service life and establishes a government post deployment software support posture. The Block II engineering, manufacturing and development (EMD) program provides for development to a performance specification, design qualification of guidance section conducted as part of the production qualification, and platform integration. Funds also develop MIL-STD 1760 launcher electronics to be fielded with the Apache Longbow Helicopter air-to-air requirements, based on Joint Service (U.S. Air Force and U.S. Army) doctrine. The air-to-air requirement satisfies three tasks: self-protection, protect force, and augmentation of air defense forces. Funding also supports an eight nation Memorandum of Understanding (MOU) signed by the Office of Secretary of Defense in 1994 for the conduct of a two-year competitive feasibility study on NATO Very Short Range Air Defense Systems (VSHORADS) and Short Range Air Defense Systems (SHORADS); this will form the basis for the development of a VSHORADS/SHORADS NATO Staff Requirement and information to support the development of a follow-on system to STINGER.

**Acquisition Strategy:** The Block I development program is a SS/CPIF contract awarded in 1992. The Block II development began FY 1993 as Technology Base Broad Agency announcement with a SS/CPFF contract. Current SS/CPFF contract awarded 1996 for pre-EMD, EMD start FY 2000, MS IIIa FY 2005, and FUE FY 2007. A SS/CPIF contract for MIL-STD Launcher electronics development was awarded mid-FY 1997. The VSHORADS/SHORADS Competitive/Firm Fixed Price contract was awarded to two international consortia; the United Kingdom was designated as the Pilot Nation, serving as contracting authority.

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

PROJECT  
**D303**

**FY 1997 Accomplishments:**

- 702 Completed Block I Performance Assessment
  - 3898 Produced Prototype Block II Electronics State of the Art Packaging (Miniaturization) of Electronics Section
  - 930 Designed and Packaged Block II Control Section
  - 4811 Integration of Block II Tactical-sized Guidance Assembly
  - 2191 Performed Evaluation of Block II Guidance Assembly
  - 2202 VSHORADS/SHORADS System Variants Development and Evaluation of System Variants
  - 1061 Continued Development of MIL-STD 1760 Launcher Electronics
- Total 15795

**FY 1998 Planned Program:**

- 2865 Finalize Block II Packaging; Fabricate and Assemble Three Tactical size Guidance Sections
  - 1464 Integrate Guidance Assembly with Control Section
  - 1588 Block II Airframe Dynamic Analysis, Tests, Performance Prediction
  - 759 Telemetry Unit Design
  - 200 Target Acquisition Sensor Study
  - 1650 Complete VSHORADS/SHORADS Feasibility Study and Forward NATO Staff Requirement
  - 219 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 8745

**FY 1999 Planned Program:**

- 735 Design/Fabricate/Evaluate Three Block II Launch Tube and End Cap Units
  - 840 Continue Hardware-in-the-Loop Flight Simulations
  - 392 Telemetry Unit Design; Performance Prediction; Preparation for Entry into EMD
- Total 1967

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

PROJECT  
**D303**

<b><u>B. Project Change Summary</u></b>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY 1998/1999 President's Budget	18277	5024	1957
Appropriated Value	18277	9024	
Adjustments to Appropriated Value	-2482	-279	
FY 1999 President's Budget	15795	8745	1967

Change Summary Explanation: Funding: FY 1997: Reprogrammed to higher priority requirements (-2482). FY 1998: Congressional increase (+4,000) and undistributed Congressional reductions (-279K).

<b><u>C. Other Program Funding Summary</u></b>									To	Total
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Compl</u>	<u>Cost</u>	
Missile Procurement, Army										
Budget Activity 3 - Stinger Mods (C21300)	37184	17425	13924	19624	26318	31550	26097	Cont'd		Cont'd
Budget Activity 3 - BSFV-E Mods (C21500)		3701								

<b><u>D. Schedule Profile</u></b>		<u>FY 1997</u>				<u>FY 1998</u>				<u>FY 1999</u>		
	1	2	3	4	1	2	3	4	1	2	3	4
Block I Performance Assessment			X*									
Initiate Block II Guidance Section			X*									
Integration Design												
Complete Block II Tactical Size					X							
Electronics												
Complete Block II Guidance								X				
Section Integration Design												
Complete Integration of Guidance											X	
Hardware with Simulation												

\*Milestone completed

**RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

PROJECT  
**D303**

**A. Project Cost Breakdown**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Project Management In-House	1071	439	75
Res Dev & Eng Cmd (RDEC) Engineering Support	2616	439	159
Major Development Contractor	9396	5726	1733
Contracted Services	60	200	
Other Government Agencies	450	380	
UK MOU Contractor	1732	1168	
UK Management Office	176	29	
UK MOU U.S. Program Support	294	364	
Total	15795	8745	1967

**B. Budget Acquisition History and Planning Information**

**Performing Organizations**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Block I Dev	Various	Various		30937	30907	30				30937
Block II PDRR	Various	Various			6775	30		1733		8538
DAAH0196C0180	SS-CPFF	Mar 96			6750	7496	5426			19672
DAAH0197C0099	SS-CPFF	Jul 97				900	300			1200
SUE Dev	Various	Various			102	1000				1102
BSFV Prior	Various	Various			7025					7025
PMO/RDEC	Allot/1095	Various			3155	3687	878	234		7954
Other Govt Agen	MIPR	Various			42	450	380			872
Blk II EMD 00-05	TBD	TBD							Cont'd	Cont'd
Future SHORAD	TBD	TBD							Cont'd	Cont'd
British Aerospace	C-FFP	Jul 96			322	866	584			1772
Thomson-CSF	C-FFP	Aug 96			321	866	584			1772

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

PROJECT  
D303

Contractor or Government Performing <u>Activity</u>	Contract Method/Type or Funding <u>Vehicle</u>	Award or Obligation <u>Date</u>	Performing Activity <u>EAC</u>	Project Office <u>EAC</u>	Total Prior to <u>FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Budget to <u>Complete</u>	Total <u>Program</u>
UK Ministry of Defense (Mgt Ofc)	MOU/1095	Dec 95			106	176	29			2311
<b>Support and Management Organizations</b>										
DLA90093D0011	SS-FFP	Aug 96			575		200			775
U.S. Prog Spt	1095	Dec 95			291	294	364			949
MOU VSHORAD/ SHORADS										
<b>Test and Evaluation Organizations:</b> None										
<b>Government Furnished Property:</b> Not applicable										
Subtotal Product Development					55505	15501	8181	1967	Cont'd	Cont'd
Subtotal Support and Management					866	294	564			1724
Subtotal Test and Evaluation										
Total Project					56371	15795	8745	1967	Cont'd	Cont'd

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