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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 – Program Definition Risk and Reduction				PE NUMBER AND TITLE 0603881C Terminal Defense Segment						
COST (<i>In Thousands</i>)	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	0	0	988180						Cont.	Cont.
2010 Ground-Based Terminal	0	0	974242						Cont.	Cont.
2090 Program Operations	0	0	13938						Cont.	Cont.

FY02 AMENDED PB REQUEST FOR PE 0603881C, TERMINAL DEFENSE IS \$20M MORE THAN THE FY02 AMENDED PB R-1 TERMINAL DEFENSE PE AMOUNT OF \$968,180K. THIS IS DUE TO THE TRANSFER OF \$20M FROM THE PE 0603175C, BMD TECHNOLOGY, IN SUPPORT OF THE FY02 CONTINUED ISRAELI COOPERATIVE PROGRAM.

A. Mission Description and Budget Item Justification

The Terminal Defense Segment (TDS) allocates resources to support development and selective upgrades of defensive capabilities that engage and negate ballistic missiles in their terminal phase of their trajectory. The primary projects under this Program Element (PE) are the Theater High Altitude Area Defense (THAAD) project and the Israeli Arrow Deployability Program (ADP). Related activities include the Israeli Test Bed (ITB), Arrow System Improvement Program (ADOP), and studies via the Israeli Systems Architecture and Integration (ISA&I) effort that assess the Arrow performance relative to both existing and emerging threats.

The mission of the THAAD Project is to defend against short and medium range theater ballistic missiles (TBMs) at long ranges and high altitudes. THAAD's long-range capability will protect U. S. and allied armed forces, broadly dispersed assets and population centers against TBM attacks.

The Arrow system (developed jointly by the U.S. and Israel) provides Israel an indigenous contingency capability to defend against short and medium range ballistic missiles and helps ensure U.S. freedom of action in future contingencies. Arrow also provides protection against ballistic missile attacks to U.S. forces deployed to the region. The Arrow Deployability Program (ADP) supports Israel's acquisition of a third Arrow battery and Arrow's interoperability with U.S theater missile defense systems (TMD) via a JTIDS/Link-16 common communication architecture. Technologies cooperatively developed under the Arrow Deployability Program are transitioned to U.S. TMD developmental programs for their use or to provide risk reduction and lessons learned. The Arrow System Improvement Program (ASIP) explores upgrades to the Arrow Weapon System designed to allow Arrow to address more stressing threats.

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B. Program Change Summary	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
Previous President's Budget (<u>FY 2001</u> PB)				
Appropriated Value				
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. SBIR / STTR				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 2001</u> PB				
Current Budget Submit (<u>FY 2002</u> PB)			988180	

Change Summary Explanation:

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BUDGET ACTIVITY 4 – Program Definition Risk and Reduction				PE NUMBER AND TITLE 0603881C Terminal Defense Segment					PROJECT 2010		
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
2010	Ground-Based Terminal			974242						Cont.	Cont.

A. Mission Description and Budget Item Justification
Ground Based Terminal Projects
 THAAD (The THAAD program has been transferred from PE 0604861C to PE 0603881C, Terminal Defense Segment).
 THAAD Project Development phase will refine and mature the project design to ensure component and project performance, producibility, and supportability. The mission of the THAAD Project is to defend against short and medium range Theater Ballistic Missiles (TBMs) at long ranges and high altitudes. THAAD’s long range capability will protect U. S. and allied armed forces, broadly dispersed assets and population centers against TBM attacks. THAAD’s capability to intercept at high altitudes allows multiple intercept opportunities and will significantly mitigate the effects of weapons of mass destruction. The THAAD Project consists of missiles, launchers, and radar(s), Battle Management/Command, Control, Communications, and Intelligence (BM/C³I) units, and support equipment.

Block 2004 THAAD Accelerate development of battle management and radar software, accelerate delivery of the first developmental radar, and acquire ten additional missile test assets. Upon successful completion of flight tests a limited contingency capability could be available in 2005.

Block 2006 THAAD The initial THAAD configuration (C1) delivery is planned for FY2007. C1 will include the capability to defeat all expected short and medium range threats. Enhanced survivability and battalion operational software are deferred to the next configuration (C2).

Block 2012 THAAD - Configuration 2 (C2) – to be available in FY2012 – represents the second capability increment delivered as part of THAAD's evolutionary acquisition/development strategy. C2 builds on the core, near-term missile defense capability provided by THAAD C1. C2 expands the capabilities of the THAAD project to address more advanced threats. C2 will implement battalion-level engagement operations and force operations battle management software for more flexible employment; additionally, upgraded missile and radar software will specifically enhance the project's performance in the presence of sophisticated countermeasures.

Israeli Arrow Program This project provides funding for the Arrow Deployability Program (ADP) to include the third Arrow battery, Arrow interoperability with U.S. Theater Missile Defense (TMD) projects, Phases I and II of the Arrow System Improvement Program (ASIP), Israeli Test Bed (ITB), and the Israeli System Architecture and Integration (ISA&I). The United States derives considerable benefits from its participation in these projects. The presence of a ballistic missile defense system in Israel developed under this project helps ensure U.S. freedom of action in future contingencies and provides protection against ballistic missile attacks to U.S. forces deployed to the region. The cooperative effort also provides risk reduction and alternative technologies for U.S. ballistic missile defense programs as well as phenomenology and kill assessment data. The Arrow Deployability Program (ADP), which will be completed in FY02, integrates and tests the cooperatively developed Arrow II missile with the Israeli developed ground components. The ADP effort also provides for project level flight testing and deployment of a contingency capable User Operational Evaluation System (UOES). The Arrow is interoperable with U.S. TMD systems through the Link 16 system. The International Agreement (IA) between the U.S. and Israel for the

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<p>ADP will be amended to provide a final installment of \$34M in FY02 to complete U.S. funding of an Arrow third battery. The ASIP effort will evolve the Arrow Weapon System (AWS) to defeat longer range and more robust threats expected to be deployed in the Middle East in the near future. An annex for phase II of ASIP will also be concluded to allow work on ASIP to continue. The Israeli Test Bed and ISA&I efforts will continue to support AWS development as well as develop future TMD architectures.</p>		
FY 2000 Accomplishments:		
•	Funding for Terminal Defense Segment exists and is provided under Project 2260, Program Element 0604861C; Project 2259, Program Element 0603875C	
Total		
FY 2001 Planned Program:		
•	Funding for Terminal Defense Segment exists and is provided under Project 2260, Program Element 0604861C; Project 2259, Program Element 0603875C	
Total		
FY 2002 Planned Program:		
•	Ground Based Projects Block 2004 THAAD	
•	210000	Continue missile, radar, BM/C ³ I, and launcher hardware and software development. Conduct BMC ³ I and launcher Critical Design Reviews (CDRs). Conduct project and Missile Preliminary Design Reviews (PDRs). Conduct radar software CDR. Complete breadboard testing. Begin design verification testing.
•	Ground Based Project Block 2006 THAAD	
•	614643	Continue missile, radar, BM/C ³ I, and launcher hardware and software development. Conduct BMC ³ I and launcher CDRs. Conduct project and Missile PDRs. Conduct radar software CDR. Complete breadboard testing. Begin design verification testing.
•	33100	Support Contracts: Continue software independent verification and validation. Continue nuclear environment survivability analysis. Continue discrimination, navigation and control algorithm development.
•	22200	Other Government Agencies (OGAs), Government Furnished Equipment (GFE)/other: Continue integration and testing of Joint Tactical Information Distribution System (JTIDS) radios. Continue BMC ³ I, and simulation efforts. Continue project threat vulnerability assessment. Maintain integrated logistics and project assurance efforts.
•	18400	In-house support: Fund government salaries, benefits, travel, and training.
•	5400	Test Planning
•	1300	Operational Test & Evaluation (OT&E): Conduct independent assessment of the THAAD Project.
•	3500	Lethality: Conduct lethality simulation code validation.
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- **Israeli Arrow Program**
- 41699 Arrow Deployability Program. Finalize ADP interoperability validation to include assessing combined engagement coordination and providing Joint Interoperability Test Command assessment of AWS interoperability with U.S. TMD systems. Funding includes final U.S. installment of \$34M for Israel's third Arrow battery. The United States will again adjust its ADP cost share to allow Israel to reduce its ADP funding by an equal amount so that it may provide final funding of third battery components.
- 2500 ITB. Conduct ITB experiments to evaluate Arrow System Improvement Program performance specifications against future threats and assess Arrow interoperability between improved Arrow and U.S. TMD systems. Support USEUCOM/IAF involvement at the ITB to incorporate experiment results in subsequent revisions to the combined OPLAN and CSOP.
- 1500 ISA&I. Assess potential contributions by deployed U.S. TMD assets to Israel’s missile defense. Determine ITB experiment objectives and analyze experiment results. Assess improved Arrow performance against emerging regional threats and identify growth path refinements necessary for the AWS to remain an effective ballistic missile defense for the State of Israel.
- 20000 Continued Israeli Cooperative Programs. Continue ASIP and explore options to co-produce the Arrow missile in the U.S.
- Total 974242

B. Other Program Funding Summary	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	To <u>Compl</u>	Total <u>Cost</u>
Ground-based Terminal Projects										
PE 0603861C THAAD-PDRR	506221									
PE 0604861C THAAD – EMD	81614	542498								
PE 0603875C International Cooperative Program	83984	129699								
PE 0603880C BMD System			779584						Cont.	Cont.
PE 0603882C Midcourse Defense Segment			3940534						Cont.	Cont.
PE 0603883C Boost Defense Segment			685363						Cont.	Cont.
PE 0603884C Sensors			495600						Cont.	Cont.
PE 0603175C Technology			112890						Cont.	Cont.

C. Acquisition Strategy:

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2a Exhibit)	DATE June 2001
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BUDGET ACTIVITY 4 – Program Definition Risk and Reduction	PE NUMBER AND TITLE 0603881C Terminal Defense Segment	PROJECT 2010
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D. Schedule Profile	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Block 2006 – THAAD								
Radar CDR (HW/SW)			1Q					
Launcher PDR								
BM/C ³ I PDR (HW)								
Launcher CDR			3Q					
BM/C ³ I CDR (SW/HW)			3Q					
Project PDR			3Q					
Missile CDR								
Project CDR								
Configuration 2 PDR								
Radar 1 Integration & Test Complete								
Component Test Flights Begin								
C2 Authority to Proceed (ATP)								
Developmental Tests –Begin								
Award 14 Missile Option								
Project Qualification Test Ready								
Project Readiness Review Assessment								
Long Lead Award								
Radar 2 Integration & Test Complete								
LRIP-1 Award								
FUE								
Israeli Arrow Program								
Arrow Weapon System Flight Tests			1Q & 3Q					
Conduct TMDSE Proof-Of-Concept Test II								
Initiate Interoperability Tests w/ U.S. TMDSE								
ADP final Third Battery Cost Share Adjustment			2 Q					
Complete ASIP Feasibility Study								
Complete ADP			2 Q					
Conduct cooperative R&D flight test			2 Q					

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ASIP Phase II Activities			2Q					
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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-3 Exhibit)										DATE June 2001		
BUDGET ACTIVITY 4 – Program Definition Risk and Reduction					PE NUMBER AND TITLE 0603881C Terminal Defense Segment					PROJECT 2010		
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. THAAD Project	CPAF/FF	LMSSC				824643				Cont.	Cont.	
a. ADP Dev & Third Arrow Battery	International Agreement with Israel	Israel Ministry of Defense, Israel				38699				Cont.	Cont.	
b. ISA&I	FFP with Cost Share	Wales, Ltd., Israel				1500				Cont.	Cont.	
c. ITB	FFB	USA/SMDC Huntsville, AL				2500				Cont.	Cont.	
d. ASIP	International Agreement with Israel	Israel Ministry of Defense, Israel				17000				Cont.	Cont.	
e.												
Subtotal Product Development:						884342				Cont.	Cont.	
Remark:												
II. Support Costs	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. SETA	Various		0			33100				Cont.	Cont.	
b. OGAs	MIPR		0			19000				Cont.	Cont.	
c. Program Mgmt	Various		0			18400				Cont.	Cont.	
a. ADP Arrow Project Office	Direct Funding	PEO/AMD				3000				Cont.	Cont.	
b. ASIP Support	Direct Funding	PEO/AMD				3000				Cont.	Cont.	
Subtotal Support Costs:						76500				Cont.	Cont.	

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BMDO RDT&E COST ANALYSIS (R-2a)									DATE June 2001	
BUDGET ACTIVITY 4 – Program Definition Risk and Reduction				PE NUMBER AND TITLE 0603881C Terminal Defense Segment					PROJECT 2090	
COST (<i>In Thousands</i>)	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
2090 Program Operations	0	0	13938						Cont.	Cont.

A. Mission Description and Budget Item Justification

This project covers personnel and related facility support costs, statutory and fiscal requirements, support service contracts and the BMDO Data Centers Programs.

Personnel covers government civilians performing program-wide oversight functions such as financial management, contracting, security, information systems support, and legal services at the Ballistic Missile Defense Organization located within the Washington D.C. area, as well as BMDO's Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, US Air Force and the Joint National Test Facility. Related facility costs include rents, utilities, supplies, ADP equipment, and all the associated operation and maintenance activities.

Fiscal Requirements include reimbursable services acquired through the Defense Business Operating Fund (DBOF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. BMDO has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Also includes funding for charges to canceled appropriations in accordance with Public Law 101-510.

Assistance required to support BMD program-wide management functions is also contained in this project. This assistance ranges from operational contracts to support functions such as ADP operations, Access control offices and graphics support, to efforts required to supplement BMDO and Executing Agent government personnel. Typical efforts include cost estimating, security management, information management, technology integration across BMDO projects and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

This project also includes the BMDO Data Centers Programs. The BMDO Data Centers Information System Program Manager provides management, oversight, technical assistance, and expertise for the BMDO Data Centers Program. The BMDO Data Centers Program archives, manages, and develops data projects, distributes and provides remote access to all relevant BMD data. Operation and management of Data Center activities is accomplished at several sites, each site specializing in a particular discipline. Taskings include providing assessments for technical/programmatic issues and data center performance, coordinating segment customer program/data management requirements, and cooperative partnership requirements.

