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

DATE: February 2002

BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE: 0603883C Boost Defense Segment

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	599835	796927	1389817	1399902	1591160	2274654	Continuing	Continuing
4020 Sea-Based Boost	0	30601	89639	258000	545000	747000	1246000	Continuing	Continuing
4030 Air-Based Boost	0	475818	597969	830350	489120	357020	455670	Continuing	Continuing
4040 Space-Based Boost	0	23842	54393	177000	230000	365000	501000	Continuing	Continuing
4043 Space-Based Laser	0	49211	34810	50000	50000	50000	50000	Continuing	Continuing
4060 Test and Evaluation	0	0	0	55000	65000	50000	0	Continuing	Continuing
4090 Program Operations	0	20363	20116	19467	20782	22140	21984	Continuing	Continuing

A. Mission Description and Budget Item Justification

BOOST DEFENSE SEGMENT

The mission of the Boost Defense Segment (BDS) is to protect US Forces, US Allies, friends and areas of vital interest from ballistic missile attack by providing the Ballistic Missile Defense System (BMDS) the capability to negate the effectiveness of ballistic missiles early in their trajectory while in powered flight. The objective of the BDS is to develop and demonstrate directed energy (DE) and kinetic energy (KE) capabilities to perform this mission, creating a boost phase early defense layer. Early proof of principle activities include a lethality demonstration (missile shootdown) using an Airborne Laser (ABL), KE risk reduction and flight test experiments, and risk reduction for a future Space Based Laser. These activities will show the feasibility of engaging a ballistic missile during the boost phase in a representative environment.

The boost phase of the ballistic missile trajectory is the flight segment from post launch through propellant burnout when the missile enters the midcourse phase of ballistic flight. The boost phase typically includes the first 60-300 seconds of flight and concludes at altitudes between 20-450 kilometers. This short duration and low altitude combined with an accelerating target pose technical challenges for boost phase intercepts. Engaging ballistic missiles in the boost phase is important to Ballistic Missile Defense (BMD) as threats can be negated long before they have an opportunity to deploy reentry vehicles, submunitions, or countermeasures. Some of the critical technical challenges to be addressed in the BDS effort include: off-board and on-board sensors; battle management, command, control and intelligence (BM/C2I) development; and the development of operations concepts sufficient to support the quick reaction launch of KE missiles or firing of DE weapons. The flow-down of

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BMD System capability specifications resulting from Missile Defense National Team efforts in BM/C2 and Systems Engineering & Integration will guide the integration of the Boost Defense Elements into the BMD System, the BMDS BM/C2 architecture, and the BMD testbed.

The BDS consists of Sea-Based Boost, Air-Based Boost, Space-Based Boost, and Space-Based Laser projects, as well as associated Test and Evaluation (T&E) and supporting Program Operations. These efforts are defined in further detail below.

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY 2002 PB)	0	685363	
Appropriated Value			
Adjustments to Appropriated Value			
a. Congressional General Reductions		-85582	
b. SBIR / STTR			
c. LEG/Tier 1			
d. FFRDC			
e. Mgmt. Efficiency			
Adjustments to Budget Years Since FY 2002 PB			796927
Current Budget Submit (FY 2003 Budget Estimates)		599835	796927

Change Summary Explanation:

FY 2003 Funding was not included during the FY 2002 Amended President's Budget Submission.

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BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment PROJECT 4020

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4020 Sea-Based Boost	0	30601	89639	258000	545000	747000	1246000	Continuing	Continuing

A. Mission Description and Budget Item Justification

SEA-BASED BOOST

The purpose of this project is to reduce the technical and programmatic risks of fielding a boost phase intercept (BPI) capability using a sea-based platform. The sea-based boost project will be supported by modeling and simulation validated by rigorous experimentation and phenomenology data collection. The sea-based BPI capabilities will be balanced with the other Boost Defense Segment (BDS) elements to achieve a robust boost defense capability, and will be delivered as part of the overall Ballistic Missile Defense (BMD) System Block capability increments.

Risk Reduction

Decisions on pursuit of a sea-based Kinetic Energy (KE) BPI concept will be supported by focused risk reduction initiatives. A functional analysis will assess risk in the kill chain and develop an investment strategy for critical KE Boost element component candidates, including KVs, boosters, sensors, battle management command and control, and platform integration. These investments will mitigate element risk through design, fabrication, and testing of element component candidates. These investments may include development and captive carry testing of high dynamic range Kill Vehicle (KV) seekers, hot fire tests of fast boosters, and investigations of alternative sea launch platforms that can accept improved interceptors. Sensor and BM/C2 assessment will be supported in this activity through integrated testing of platform, KV, booster, and sensor.

Critical Experiments

As part of the risk reduction effort, various tests and experiments will be conducted to gather empirical data, identify integration issues, and assess project progress. Targets of Opportunity will be exploited, including tracking three Titan II launches in FY 2002 and FY 2003. These tracking experiments will test ground-, sea-, and air-based sensors and systems to address critical boost phase kill chain issues, from early launch detection to missile intercept. Test planning, target acquisition, shipboard computer program development and testing, and missile acquisition will occur in FY 2003. KE boost sea-based critical experiments and flight tests will begin in FY 2004. Advanced planning for an FY 2005 focused demonstration is ongoing.

Concept Definition and Assessment

The purpose of this project is to develop feasible system and element concepts to accomplish the Boost segment mission. This effort will be accomplished with the Missile Defense National Team effort.

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BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment	PROJECT 4020

FY 2001 Accomplishments:

•	0	No Activity in FY 2001. FY 2002 new Program Element.
Total	0	

FY 2002 Planned Program:

•	9963	Initiate Sea-Based KE BPI risk reduction activities.
•	14838	Initiate Sea-Based KE experiment design, hardware and software requirement definition and development.
•	5800	KE Boost Concept Definition, concept assessment. Includes funding for the Missile Defense National Team Systems Engineering and Integration effort.
Total	30601	

FY 2003 Planned Program:

•	35000	Expand risk reduction efforts to include fabrication and design validation testing of various KE Boost element components.
•	54639	Initiate component fabrication and increased test activities in preparation for sea-based KE BPI critical experiments.
Total	89639	

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
PE 0603880C, BMD System		807993	1065982	1208546	1157025	1139885	1176979	Cont.	Cont.
PE 0603881C, Terminal Defense Segment		200119	169974	200171	234318	228443	367744	Cont.	Cont.
PE 0603882C, Midcourse Defense Segment		3762250	3192594	3071581	3016343	2969142	2595708	Cont.	Cont.
PE 0603884C, Sensors Segment		335338	373447	489181	1145680	899806	1007660	Cont.	Cont.
PE 0603175C, Technology		139340	121751	155056	130299	142785	147457	Cont.	Cont.
PE 0604861C, THAAD		866530	934681	714679	830204	920988	1131109	Cont.	Cont.

C. Acquisition Strategy:

The Sea-Based Boost risk reduction efforts will reduce the risks in several key areas to include technology development for boosters, kill vehicles, BM/C2, platform integration, and external sensors. The Missile Defense Agency will pursue multiple risk reduction efforts in these areas to support a focused demonstration decision point not earlier than FY 2005. The Sea-Based Boost project will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

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D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Initiate Broad Agency Announcements (BAA)		2Q					
Concept Assessment Complete		4Q					
KV Hover Test			2Q	4Q			
Critical Experiments				4Q	1Q		
KE Boost Focused Demonstration					4Q*		
Sea Boost Transition							4Q*

*Not earlier than

MDA RDT&E COST ANALYSIS (R-3)

DATE: February 2002

BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE: 0603883C Boost Defense Segment

PROJECT: 4020

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Experiment Component Development	CPAF	Lockheed Martin. Moorestown, NJ and Navy Executing Agent		6100	2Q			Cont.	Cont.	
b. Experiment Component Development	CPAF	Raytheon, Tucson AZ and Navy Executing Agent		11058	2Q			Cont.	Cont.	
c. Component Risk Reduction	Various	Various		1900	2Q-3Q			Cont.	Cont.	
d. Concept Development Support	Various	Various		5800	2Q-3Q			Cont.	Cont.	
e. Sea-Based Risk Reduction Activities	Various	Various				35000	1Q-2Q	Cont.	Cont.	
Subtotal Product Development:				24858		35000		Cont.	Cont.	

Remarks:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sea-Based Experiments	Various	Various				54639	1Q-2Q	Cont.	Cont.	
b. Sea-Based Test and Evaluation	Allot	SMDC, Huntsville, AL		1500	2Q			Cont.	Cont.	
Subtotal Test and Evaluation:				1500		54639		Cont.	Cont.	

Remarks:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	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/FFRDC	Various	Various		4243	2Q			Cont.	Cont.	
Subtotal Management Services:				4243				Cont.	Cont.	

Remarks:

Project Total Cost:				30601		89639		Cont	Cont	

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment	PROJECT 4030

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4030 Air-Based Boost	0	475818	597969	830350	489120	357020	455670	Continuing	Continuing

A. Mission Description and Budget Item Justification

AIR-BASED BOOST

The Airborne Laser (ABL) is an element of the Ballistic Missile Defense System (BMDS). ABL Block 2004 and ABL Block 2008 designate capability levels. This nomenclature reflects the block designations of the BMDS. ABL is an existing product line that will design, build and test an air-based laser system to acquire, track, and kill ballistic missiles in their boost phase. The ABL system integrates three major subsystems (Laser, Beam Control, and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400F aircraft. The ABL system also includes ABL-specific ground support equipment.

The ABL system development will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

ABL Block 2004 – An ABL program definition and risk reduction contract was awarded to the Boeing/TRW/Lockheed-Martin team in November 1996, to design, fabricate, integrate, and test an ABL aircraft with a laser device. The Block 2004 phase culminates in a lethality demonstration (missile shootdown) against boosting ballistic missile threat-representative targets and delivers one aircraft for integration and testing in the BMDS testbed. This aircraft will be capable of providing contingency capability, if directed, that offers rudimentary protection of the United States.

ABL Block 2008, 2010, 2012 – This effort provides for development of the Air-Based Boost Defense capability consistent with BMDS needs. It will include maturation to a second ABL aircraft, ABL Block 2008 that includes new technologies, with enhanced lethality, and additional operational suitability.

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BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE: 0603883C Boost Defense Segment / PROJECT: 4030

FY 2001 Accomplishments:

- 0 The Boost Defense Segment is a new program element (PE –0603883C) that includes programmatics and funding transferred from PE 0603319F – Airborne Laser Technology (AF). For completeness, the program plans/accomplishments of this PE are included here.
- 0 Airborne Laser (0603319F):
  Continued Boeing/TRW/Lockheed-Martin program definition and risk reduction contract effort for design, fabrication, integration, and testing the ABL system, including design and development of the System Integration Laboratory (SIL) at the Birk Test Facility at Edwards AFB, CA. Continued procurement of targets, conducted test activities at Edwards AFB, lethality assessments on ABL target sets, modeling and simulation activities, and performed advisory and assistance services. Continued government operations and support for labor, training, and Integrated Product Team (IPT) participation.

Total 0

FY 2002 Planned Program:

- 10000 Initiate buy of long-lead optics for Block 2008.
- 400000 Continue Boeing/TRW/Lockheed-Martin Block 2004 program definition and risk reduction contract effort for design, fabrication, integration, and testing the ABL system, including design and development of the SIL at the Birk Test Facility at Edwards AFB, CA.
  - Complete Laser Module 1 Testing
  - Deliver beacon and target illuminator lasers
  - Deliver and mount laser turret and roll shell
  - Coat primary mirror
- 65818 Continue buy of targets, conduct test activities at Edwards AFB, lethality assessments on ABL target sets, modeling and simulation activities, and perform advisory and assistance services. Continue government operations and support for labor, training, and IPT participation.

Total 475818

FY 2003 Planned Program:

- 85000 ABL Block 2008: Initiate payments for commercial "green" 747-400 aircraft and continue acquisition of long-lead optics.
- 435250 Continue Block 2004 contract effort for development, integration, and test activities leading to integration of ABL Block 2004 in the BMDS testbed. Complete BMC4I segment testing, laser integration, and continue ground testing. Begin Block 2008 engineering design.
- 77719 Continue acquisition of targets, conduct test activities at Edwards AFB, lethality assessments on ABL target sets, modeling and simulation activities, and perform advisory and assistance services. Continue government operations and support for labor, training, and IPT participation.

Total 597969

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BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment
	PROJECT 4030

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
PE 0603880C, BMD System		807993	1065982	1208546	1157025	1139885	1176979	Cont.	Cont.
PE 0603881C, Terminal Defense Segment		200119	169974	200171	234318	228443	367744	Cont.	Cont.
PE 0603882C, Midcourse Defense Segment		3762250	3192594	3071581	3016343	2969142	2595708	Cont.	Cont.
PE 0603884C, Sensors Segment		335338	373447	489181	1145680	899806	1007660	Cont.	Cont.
PE 0603175C, Technology		139340	121751	155056	130299	142785	147457	Cont.	Cont.
PE 0603173C, Supp and Follow-on Tech/Advanced Tech Development	130716								
PE 0603319F, Airborne Laser Technology	385876								
PE 0604861C THAAD		866530	934681	714679	830204	920988	1131109	Cont.	Cont.

C. Acquisition Strategy:

The flow down of BMD System capability specifications resulting from Missile Defense National Team efforts in BM/C2 and Systems Engineering & Integration will guide the integration of the ABL system into the BMD System, the BMDS BM/C2 architecture, and the BMDS testbed. The ABL system entered into a program definition and risk reduction contract in November 1996. Major subsystem development, integration, and testing is projected to commence in FY 2003. The program plan is structured to demonstrate technical achievements throughout the preliminary design and risk reduction phase, culminating in a lethality demonstration. This capability-based program takes a spiral development approach towards fielding an ABL system. The approach takes advantage of producing a line of ABL systems that systematically and incrementally adds more capability as the technology matures. This strategy produces Block 2004 and Block 2008 ABL capabilities during the development phase. The Block 2004 ABL system will integrate and test key technologies, allowing improved capabilities and integration of maturing technologies in the Block 2008 ABL system.

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
ABL: Start long lead items for Block 2008		2Q					
ABL: Start Block 2008 Green Aircraft payments			1Q				
ABL: Block 2004 Lethality Demonstration					1Q		
ABL: Integrate Block 2004 into BMDS Testbed					3Q		
ABL: Begin Block 2008 Aircraft Modifications					1Q		
ABL: Production Decision Points (NET)			3Q	3Q	3Q	3Q	3Q
ABL: Testbed Block Upgrade Decision Points				3Q		3Q	

MDA RDT&E COST ANALYSIS (R-3)

DATE: February 2002

BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE: 0603883C Boost Defense Segment

PROJECT: 4030

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ABL PDRR Contract and Concept Design	CPAF	Boeing Defense & Space Group Seattle, WA								
-Aircraft				40000	1Q-4Q			Cont.	40000	
-Laser				115000	1Q-4Q	75000	1Q-4Q	Cont.	190000	
-Beam Control/Fire Control				130000	1Q-4Q	60000	1Q-4Q	Cont.	190000	
Battle Manangement/C4I				20000	1Q-4Q	20000	1Q-4Q	Cont.	40000	
-Integration and Test				95000	1Q-4Q	125000	1Q-4Q	Cont.	220000	
-Long Lead				10000	1Q-4Q			Cont.	10000	
-Block 2008										
-IronBird/SIL						50000	1Q-4Q	Cont.	50000	
-Design (SRR, PDR, CDR)						105000	1Q-4Q	Cont.	105000	
-Long Lead						85000	1Q-4Q	Cont.	85000	
Subtotal Product Development:				410000		520000			930000	

Remark:
ABL – The Air Force awarded an ABL program definition and risk reduction contract on 12 Nov 1996 to a team composed of Boeing, TRW, and Lockheed Martin.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ABL Technical Support Contracts	Various	Various		6000	1Q-4Q	6000	1Q-4Q	Cont.	12000	
b. Targets	Various	Various		15000	1Q-4Q	8000	1Q-4Q		23000	
c. ABL Government In – House and Other External Support	Various	Various		44818	1Q-4Q	63719	1Q-4Q	Cont.	108537	
Subtotal Support Costs:				65818		77719			143537	

Remark:

BMDO RDT&E COST ANALYSIS (R-3)	DATE February 2002
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Project Total Cost:				475818		597969				

Remark:

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment PROJECT 4040

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4040 Space-Based Boost	0	23842	54393	177000	230000	365000	501000	Continuing	Continuing

A. Mission Description and Budget Item Justification

SPACE-BASED BOOST

This effort is focused on development of space-based kinetic energy (KE) applications for intercepting targets in the boost phase. Appropriate experimentation and test & evaluation activities will be conducted to support informed assessment and decision-making regarding candidate space based boost kinetic energy intercept capabilities. These candidate capabilities will be supported by risk reduction activities, advanced sensor data integration and fusion, BM/C2, and advanced Kill Vehicle (KV) components and integration. In parallel, this project will be supported by modeling and simulation validated by experimentation and phenomenology data collection. The completion of concept assessment in early FY 2003 will facilitate the rapid initiation of component development and fabrication for risk reduction and critical experiments.

Risk Reduction

Decisions on pursuit of a space-based KE BPI concept will be supported by focused risk reduction initiatives. A functional analysis will assess risk in the kill chain and develop an investment strategy for critical KE Boost element components, including Kill Vehicles (KV), boosters, sensors, battle management command and control, and platform integration. These investments will mitigate element risk through design, fabrication, and test of element component candidates. Investments will include development and captive carry testing of high dynamic range KV seekers, advanced lightweight KVs, and space launch platforms. Sensor and BM/C2I assessment will be supported in this activity through integrated testing of platform, KV, booster, and sensor.

Critical Experiments

Critical risks to space-based boost phase intercepts are well defined. A spectrum of experiments is planned to demonstrate risk reduction progress and to provide empirical data to enable decisions on the acquisition of space-based KE Boost capabilities.

Concept Definition and Assessment

The purpose of this project is to develop feasible system and element concepts to accomplish the Boost segment mission. This effort will be accomplished with the Missile Defense National Team effort.

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	PROJECT 4040

FY 2001 Accomplishments: New start: Not funded prior to FY 2002

FY 2002 Planned Program:

- 4642 Space-Based KE BPI risk reduction activities.
- 5200 Initiate KE experiment design and hardware and software requirement definition and design.
- 14000 KE Boost Concept Definition, concept assessment. Includes funding for the Missile Defense National Team Systems Engineering and Integration effort.

Total 23842

FY 2003 Planned Program:

- 4393 Continued component risk reduction activity for Space Based KE Boost.
- 50000 Continued KE experiment design and develop and fabricate components for experiments.

Total 54393

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
PE 0603880C, BMD System		807993	1065982	1208546	1157025	1139885	1176979	Cont.	Cont.
PE 0603881C, Terminal Defense Segment		200119	169974	200171	234318	228443	367744	Cont.	Cont.
PE 0603882C, Midcourse Defense Segment		3762250	3192594	3071581	3016343	2969142	2595708	Cont.	Cont.
PE 0603884C, Sensors Segment		335338	373447	489181	1145680	899806	1007660	Cont.	Cont.
PE 0603175C, Technology		139340	121751	155056	130299	142785	147457	Cont.	Cont.
PE 0604861C THAAD		866530	934681	714679	830204	920988	1131109	Cont.	Cont.

C. Acquisition Strategy:

The Space-Based Boost risk reduction efforts will reduce the risks in several key areas to include technology development for boosters, kill vehicles, BM/C2, platform integration, and external sensors. The Missile Defense Agency will pursue multiple risk reduction efforts in these areas to support a product line decision not earlier than FY 2006. The Space-Based Boost project will follow the MDA's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

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D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Concept Assessment Complete		4Q					
Decision Point For Accelerated Early Focused Critical Experiment			1Q				
Initiate Experiment Component Development			2Q	2Q			
KE Critical Experiment					4Q		
Focused Demonstration						2Q	

MDA RDT&E COST ANALYSIS (R-3)

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BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE: 0603883C Boost Defense Segment

PROJECT: 4040

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. KE Component Risk-Reduction	Various	Multiple				4393	1Q-2Q	Cont.	Cont.	
b. KE Experiment Design	Various	Multiple				50000	1Q-2Q	Cont.	Cont.	
c. Experiment Component Development	CPFF	Boeing, Canoga Park, CA, and Air Force Executing Agent		5500	2Q			Cont.	Cont.	
d. Experiment Component Design	CPAF	Raytheon, Tucson, AZ.		842	2Q			Cont.	Cont.	
e. Component Risk Reduction	Various	Multiple		500	2Q-3Q			Cont.	Cont.	
f. Concept Development Support	Various	Multiple		14000	2Q-3Q			Cont.	Cont.	
Subtotal Product Development:				20842		54393		Cont.	Cont.	

Remark:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	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/FFRDC	Various	Multiple		3000	2Q			Cont.	Cont.	
Subtotal Management Services:				3000				Cont.	Cont.	

Remark:

Project Total Cost:				23842		54393		Cont.	Cont.	

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment PROJECT 4043

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4043 Space-Based Laser	0	49211	34810	50000	50000	50000	50000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Based on the FY 2002 funding reduction, the MDA will be reevaluating the Space Based Laser (SBL) program. Activities involving the Integrated Flight Experiment concept will be brought to a halt in an orderly manner, preserving long term value for a future program.

The SBL project will continue to fund technology development and risk reduction contributing to operational SBL system concepts. An Affordable Concept Study will be conducted to investigate SBL contributions to the BMDS with a major milestone decision on the future program in late FY 2003. Technology risk reduction may be pursued in the key areas of lasers, beam control, and beam director. These efforts leverage work started under previous SBL-funded technology development programs.

The project is part of the department's long-term strategy to enable the future development of an affordable, responsive SBL operational system. An operational SBL system may ultimately provide a highly effective defense against ballistic missile attack through continuous, global availability and the ability to perform early, boost phase missile destruction prior to reentry vehicle and countermeasure deployment. Nearer term contributions to the BMDS may include discrimination, Reentry Vehicle (RV) identification and other non-lethal missions.

FY 2001 Accomplishments: Project was funded under Program Element 0603174C (Support and Follow on Technologies – Space Based Laser) and Air Force Program Element 0603876F (SBL).

•	0	For FY 2001 accomplishments for this project refer to BMDO Program Element 0603174C (Support and Follow on Technologies – Space Based Laser) and Air Force Program Element 0603876F (SBL) in FY 2001.
Total	0	

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment
PROJECT 4043	

FY 2002 Planned Program:

- 49211 - Accomplish System Definition Review (SDR) for the SBL Integrated Flight Experiment **(completed).**
  - Accomplish Critical Design Review of the IFX laser "short stack" **(completed).**
  - Complete documentation of IFX work accomplished through CY 2001.
  - Conduct experiments and risk reduction activities that may include the following:
    - - High energy laser experiments and advanced laser technology activities for application to operational system.
    - - Advanced beam control experiments.
    - - Large Light-weight Optics Technology development.
  - Conduct Affordable Concept Study to define operational concept and early BMDS contributions.

Total 49211

FY 2003 Planned Program:

- 34810 - Continue FY 2002 technology experiments and risk reduction activities that may include the following:
  - - High energy laser experiments and advanced laser technologies activities for application to operational system.
  - - Advanced beam control experiments.
  - - Large Light-weight Optics Technology development.
  - Conclude Affordable Concept Study.
  - Begin to Implement Affordable Concept Study results.

Total 34810

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
PE 0603880C, BMD System		807993	1065982	1208546	1157025	1139885	1176979	Cont.	Cont.
PE 0603881C, Terminal Defense Segment		200119	169974	200171	234318	228443	367744	Cont.	Cont.
PE 0603882C, Midcourse Defense Segment		3762250	3192594	3071581	3016343	2969142	2595708	Cont.	Cont.
PE 0603884C, Sensors Segment		335338	373447	489181	1145680	899806	1007660	Cont.	Cont.
PE 0603175C, Technology		139340	121751	155056	130299	142785	147457	Cont.	Cont.
PE 0603174C, BMDO SBL	69595							Compl	Compl
PE 0603876F, Air Force Space-Based Laser	67414								
PE 0604861C THAAD		866530	934681	714679	830204	920988	1131109	Cont.	Cont.

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment	PROJECT 4043

C. Acquisition Strategy:

The SBL acquisition strategy to date has been to employ a Joint Venture consisting of Boeing, Lockheed Martin, and TRW to pursue the Integrated Flight Experiment. Budget reductions have led to a need to reevaluate the SBL program. Near term focus has changed to conducting key technology risk reduction activities. The Joint Venture contract will be definitized to accomplish this activity in FY 2002, and possibly into FY 2003, then closed out. New contract vehicles will be pursued to address the needs of follow-on activities.

In FY 2002 an Affordable Concept Study will be conducted to determine the best path to achieving an affordable operational SBL system that contributes to the BMDS at the earliest possible time. Future acquisition strategy will be guided by the results of this study.

SBL will follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, spiral development, and evolutionary acquisition through the use of two-year capability blocks.

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
IFX System Requirements Review	2Q						
IFX System Definition Review		1Q					
Conduct APEX Beam Control Experiment		2Q					
Conduct High Energy Laser Test		3Q					
Program Restructure Decision			3Q*				
Conduct Closed-Loop Beam Control Experiment			4Q				
Conduct Disturbance Mitigation and Pointing System Experiment			4Q				

*The Department will decide in 3Q FY 2003 on the future SBL program structure. Funding in the out-years addresses technology base activities.

MDA RDT&E COST ANALYSIS (R-3)

DATE: February 2002

BUDGET ACTIVITY: 4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE: 0603883C Boost Defense Segment

PROJECT: 4043

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SBL IFX Joint Venture team	CPAF	Boeing, Lockheed, TRW El Segundo, CA		30000	1 Nov 01 (Inc. 3)			Cont.	30000	
b. Other	Various	Various		15767	3Q-4Q	31557	2Q-3Q	Cont.	47324	
Subtotal Product Development:				45767		31557			77324	

Remark: SBL IFX Joint Venture team contract will be phased ou in FY 2002.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SBL IFX Technical Support Contracts	Various	Various		3444	1Q	3363	2Q-3Q	Cont.	Cont.	
Subtotal Support Costs:				3444		3363		Cont.	Cont.	

Remark:

Project Total Cost:				49211		34810		Cont.	Cont.	

Remark:

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment
	PROJECT 4060

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4060 Test and Evaluation	0	0	0	55000	65000	50000	0	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project is responsible for procurement of targets and countermeasures developed for boost experiments and demonstrations. Funding for this project begins in FY 2004 to support sea- and space-based Kinetic Energy (KE) Critical Experiments in FY 2004 – FY 2005 and Focused Demonstrations in FY 2005 – FY 2006. Further project detail will be provided in the FY 2004 Budget Estimates.

FY 2001 Accomplishments:

- 0 No Activity in FY 2001.

Total 0

FY 2002 Planned Program:

- 0 No Activity in FY 2002.

Total 0

FY 2003 Planned Program:

- 0 No Activity in FY 2003.

Total 0

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
N/A									

C. Acquisition Strategy:
N/A

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
N/A							

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment PROJECT 4090

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
4090 Program Operations	0	20363	20116	19467	20782	22140	21984	Continuing	Continuing

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 Missile Defense Agency (MDA) 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 Missile Defense Agency located within the Washington D.C. area, as well as The MDA's Executing Agents within the US Army Space & Missile Defense Command, US Army Program Executive Officer (PEO) Air and Missile Defense, US Navy PEO for Theater Surface Combatants, US Air Force and the Joint National Integration Center. 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 Working Capital Fund (DWCF) 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. The MDA has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Statutory requirements include funding for charges to canceled appropriations in accordance with Public Law 101-510.

Assistance required to support Ballistic Missile Defense 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 MDA and Executing Agent government personnel. Typical efforts include cost estimating, security management, information management, and technology integration across MDA 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.

FY 2001 Accomplishments:

•	0	No Activity in FY2001.
Total	0	

FY 2002 Planned Program:

•	20363	Provides management and support for overhead/indirect fixed costs such as civilian payroll, travel, rents & utilities, supplies and the data centers programs.
Total	20363	

MDA RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2002
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction	PE NUMBER AND TITLE 0603883C Boost Defense Segment PROJECT 4090

FY 2003 Planned Program:

- 20116 Provides management and support for overhead/indirect fixed costs such as civilian payroll, travel, rents & utilities, supplies and the data centers programs.

Total 20116

B. Other Program Funding Summary	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
N/A									

C. Acquisition Strategy:
N/A

D. Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
N/A							