

**UNCLASSIFIED**

<b>Missile Defense Agency (MDA) Exhibit R-2 RDT&amp;E Budget Item Justification</b>					Date <b>February 2006</b>		
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				<b>R-1 NOMENCLATURE</b> <b>0603894C Multiple Kill Vehicle</b>			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	0	50,324	164,975	285,805	357,340	412,847	505,417
0515 Multiple Kill Vehicles (MKV)	0	49,324	162,250	278,900	356,500	412,157	504,500
0602 Program-Wide Support	0	1,000	2,725	6,905	840	690	917

*Note: This PE is established per Congressional direction. Project 0515 was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.*

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

The Multiple Kill Vehicles (MKV) mission is to negate ICBM threat clusters in midcourse with a single engaging interceptor missile. The MKV system consists of a Carrier Vehicle (CV) loaded with a complement of small intercepting kill vehicles (KVs), each about the size of a loaf of bread. MKV development activities are focused on achieving the following program objectives. At the system level, MKV shall be capable of intercepting multiple midcourse targets from one interceptor and will be fully integrated with the Ballistic Missile Defense System (BMDS). The CV shall be capable of weapon to target assignment and management of KVs. The KVs shall be capable of navigation and flight to assigned acquisition baskets, target acquisition, aimpoint selection and terminal homing. The program's initial focus is on achieving the KV objectives with CV development following closely behind.

**A.1 System Element Description**

The Multiple Kill Vehicles (MKV) program is the Missile Defense Agency's transformational weapon system development program to deal with the midcourse discrimination challenge: target selection amid uncertainty and countermeasures. The MKV system consists of a Carrier Vehicle (CV) loaded with a complement of small intercepting kill vehicles (KVs), each about the size of a loaf of bread. The exact number of kill vehicles carried is classified, but can be substantially greater than 10 when MKV is launched by a Ground-Based Interceptor (GBI) booster. During flight, the CV acquires and tracks the objects in a midcourse complex, consisting of a warhead, countermeasure objects, and deployment debris, all of which can be spread out over many cubic kilometers. It then assigns kill vehicles to targets of concern, and releases them to fly out to their respective targets. Once within range of their assigned targets, the KVs autonomously acquire, hit, and destroy them using their on-board seekers and divert motors. MKV uses the existing Ground-based Midcourse Defense (GMD) sensors, fire control, and communications infrastructure. Advancements in sensors, propulsion, computers, and inertial navigation have enabled such KVs, which are small but lethal, due to the vast kinetic energies involved in midcourse hit-to-kill engagements. The MKV payload is anticipated to be ready for initial fielding in the 2014 time frame and will go through a rigorous development and test program. MKV is designed to be compatible with the GMD boosters, such as the Orbital Sciences Boost Vehicle. Trade studies for integration with the Kinetic Energy Interceptor boost vehicle and the SM-3 (21") are also being conducted.

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<p><b><u>A.2 System Element Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS)</u></b></p> <p>MKV has the ability to destroy multiple targets using a single engaging interceptor missile. When integrated with the BMD System's (BMDS's) sensors and algorithms, MKV's firepower enables the selection of many targets instead of one, best target. This dramatically alters the statistical probability of kill in favor of the defender and provides for early, decisive engagement of an adversary complex. MKV addresses the advanced emerging threats detailed in the Adversary Capabilities Document.</p> <p>MKV's firepower makes it cost effective. With MKV, the BMDS can add well over 10 midcourse engagements per booster. The resulting reduction in booster, silo and associated infrastructure costs to field MKV is thus significantly less than that for a single-KV interceptor force of equivalent capability.</p> <p>The BMD System Engineering Process has developed Engagement Sequence Groups (ESGs) for MKV in the Block 2012 and beyond time frame that will fully leverage the GMD investments being made today. In these ESGs, the Sea-Based X-Band Radar acts as the commit sensor for a GBI modified to carry the MKV payload. Fire Control and discrimination logic are similar to what is planned for the Exo-Atmospheric Kill Vehicle, but will incorporate the MKV's many vs. many capability instead of the current one vs. many logic now in use. Efforts to develop software for this capability improvement are underway at both the MKV prime contract and under Project Hercules. Other ESGs, using a wider range of launch platforms and sensors assets are being examined and developed.</p> <p>The MKV test program will progress from Hardware in the Loop (HWIL) testing to KV Hover Test, KV flight tests, and finally BMDS system level flight tests in the Pacific test bed with a CV and KVs. To maximize return on investment, MDA will manage MKV using a flexible, decision-based approach supported by vigorous management reviews. If unanticipated technological obstacles surface the program will be delayed, or if the program is on track and the adversary challenge mounts the program may be accelerated.</p> <p><b><u>A.3 Major System Element Goals</u></b></p> <p>FY06-FY07</p> <ul style="list-style-type: none"> <li>• Hover Test KV Divert and Attitude Control System Hot Fire Test</li> <li>• Hover Test KV seeker demonstration</li> <li>• Hover Test KV seeker, avionics, and software hardware-in-the-loop initiated</li> <li>• Demonstration CV component trade studies and analyses.</li> </ul>		

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<p>FY08-FY09</p> <ul style="list-style-type: none"> <li>• System Requirements Review (SRR) for MKV System</li> <li>• KV Hover Test</li> <li>• MKV System Preliminary Design Review (PDR)</li> <li>• Flight Test KV PDR</li> <li>• Flight test KV seeker, propulsion, and avionics brassboard demonstrations</li> <li>• Demonstration CV SRR</li> <li>• Demonstration CV PDR</li> </ul> <p>FY10-FY11</p> <ul style="list-style-type: none"> <li>• MKV System Critical Design Review (CDR)</li> <li>• Flight Test KV CDR</li> <li>• KV and CV (Bus) Flight Tests</li> <li>• Demonstration CV CDR</li> </ul> <p>FY12-FY13</p> <ul style="list-style-type: none"> <li>• KV and CV (Bus) Flight Tests</li> <li>• CV and KVs Level 2 System Flight Tests in Pacific Test Bed</li> </ul> <p><b><u>A.4 Major Events Schedule and Description</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Major Event</th> <th style="width: 15%;">Project</th> <th style="width: 55%;">Timeframe</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Flight Test</b></td> </tr> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Assembly, Integration and Test</b></td> </tr> <tr> <td>KV FT 1</td> <td>0515</td> <td>1Q FY 2011 - 4Q FY 2011</td> </tr> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Ground Test</b></td> </tr> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Kill Vehicle</b></td> </tr> <tr> <td>KV HWIL &amp; Ground Test</td> <td>0515</td> <td>3Q FY 2006 - 3Q FY 2008</td> </tr> <tr> <td>KV HWIL &amp; Ground Test</td> <td>0515</td> <td>3Q FY 2009 - 1Q FY 2011</td> </tr> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Carrier Vehicle</b></td> </tr> <tr> <td>HWIL &amp; Ground Test</td> <td>0515</td> <td>2Q FY 2010 - 4Q FY 2011</td> </tr> <tr> <td colspan="3" style="background-color: #d3d3d3;"><b>Assembly, Integration and Test</b></td> </tr> <tr> <td>Hover Test</td> <td>0515</td> <td>1Q FY 2009</td> </tr> </tbody> </table>			Major Event	Project	Timeframe	<b>Flight Test</b>			<b>Assembly, Integration and Test</b>			KV FT 1	0515	1Q FY 2011 - 4Q FY 2011	<b>Ground Test</b>			<b>Kill Vehicle</b>			KV HWIL & Ground Test	0515	3Q FY 2006 - 3Q FY 2008	KV HWIL & Ground Test	0515	3Q FY 2009 - 1Q FY 2011	<b>Carrier Vehicle</b>			HWIL & Ground Test	0515	2Q FY 2010 - 4Q FY 2011	<b>Assembly, Integration and Test</b>			Hover Test	0515	1Q FY 2009
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Major Event	Project	Timeframe
<b>Critical Design Review</b>		
<b>System Engineering</b>		
System CDR	0515	2Q FY 2011
<b>Kill Vehicle</b>		
Hover Test Kill Vehicle CDR	0515	2Q FY 2005
Flight Test Kill Vehicle CDR	0515	2Q FY 2010
<b>Carrier Vehicle</b>		
Carrier Vehicle CDR	0515	2Q FY 2010
<b>Delivery</b>		
<b>Kill Vehicle</b>		
Kill Vehicle Flight Test Deliveries	0515	1Q FY 2010 - 4Q FY 2011
<b>Carrier Vehicle</b>		
Carrier Vehicle Flight Test Deliveries	0515	1Q FY 2011 - 4Q FY 2011
<b>Other</b>		
<b>Program Milestones</b>		
Design Readiness Review	0515	4Q FY 2007
Design Readiness Review	0515	2Q FY 2009
Design Readiness Review	0515	3Q FY 2010
Design Readiness Review	0515	3Q FY 2011
<b>System Engineering</b>		
IPR	0515	3Q FY 2006
IPR	0515	3Q FY 2007
System PDR	0515	2Q FY 2009
IPR	0515	2Q FY 2011
IPR	0515	4Q FY 2011
<b>Carrier Vehicle</b>		
Carrier Vehicle PDR	0515	3Q FY 2009

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<p>This PE is established per Congressional direction. This effort is an outgrowth of earlier technology efforts funded from Program Element 0603175C (Project 0502).</p> <p>FY07 increase of \$164.975 million follows through with implementation of the Congressionally directed Multiple Kill Vehicles transfer and includes adjustments to achieve overhead/infrastructure reductions.</p>																																							

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				R-1 NOMENCLATURE <b>0603894C Multiple Kill Vehicle</b>															
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
0515 Multiple Kill Vehicles (MKV)	0	49,324	162,250	278,900	356,500	412,157	504,500												
RDT&E Articles Qty	0	0	0	0	0	0	0												
<p><i>Note: Project 0515 was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.</i></p> <p><b><u>A. Mission Description and Budget Item Justification</u></b></p> <p>The Multiple Kill Vehicles (MKV) mission is to negate Inter-Continental Ballistic Missiles (ICBM) threat clusters in midcourse with a single engaging interceptor missile. The MKV system consists of a Carrier Vehicle (CV) loaded with a complement of small intercepting kill vehicles (KVs), each about the size of a loaf of bread. MKV development activities are focused on achieving the following program objectives. At the system level, MKV shall be capable of intercepting multiple midcourse targets from one interceptor and will be fully integrated with the Ballistic Missile Defense System (BMDS). The CV shall be capable of weapon to target assignment and management of KVs. The KVs shall be capable of navigation and flight to assigned acquisition baskets, target acquisition, aimpoint selection and terminal homing. The program's initial focus is on achieving the KV objectives with CV development following closely behind.</p> <p><b><u>B. Accomplishments/Planned Program</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">FY 2005</td> <td style="text-align: center;">FY 2006</td> <td style="text-align: center;">FY 2007</td> </tr> <tr> <td>Multiple Kill Vehicles</td> <td style="text-align: center;">0</td> <td style="text-align: center;">49,324</td> <td style="text-align: center;">162,250</td> </tr> <tr> <td>RDT&amp;E Articles (Quantity)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </table> <p>FY05 Accomplishments: (Funded in the BMD Technology Program Element, 0603175C in Engagement Systems Project 0502).</p> <p>FY06 Planned Program:</p> <ul style="list-style-type: none"> <li>• Continue KV seeker, divert propulsion, and avionics brassboard demonstrations.</li> <li>• Conduct hover test KV seeker/avionics/software hardware-in-the-loop testing.</li> <li>• Continue hover test KV mission and seeker processor software development.</li> <li>• Continue MKV system engineering studies and analyses.</li> <li>• Conduct carrier vehicle (CV) sensor component trade studies and analyses.</li> </ul>									FY 2005	FY 2006	FY 2007	Multiple Kill Vehicles	0	49,324	162,250	RDT&E Articles (Quantity)	0	0	0
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Multiple Kill Vehicles	0	49,324	162,250																
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603894C Multiple Kill Vehicle				
FY07 Planned Program:								
<ul style="list-style-type: none"><li>Continue systems engineering studies and analyses.</li><li>Conduct hover test KV seeker, propulsion, and avionics design verification tests.</li><li>Continue hover test KV seeker/avionics/software hardware-in-the-loop testing.</li><li>Continue hover test KV mission and seeker processor software development.</li><li>Continue CV component trade studies and analyses.</li></ul>								
C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090

Project: 0515 Multiple Kill Vehicles (MKV)

MDA Exhibit R-2A (PE 0603894C)

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<b>Missile Defense Agency (MDA) Exhibit R-2A RDT&amp;E Project Justification</b>	Date <b>February 2006</b>
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<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 NOMENCLATURE</b>
<b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>0603894C Multiple Kill Vehicle</b>

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

**D. Acquisition Strategy**

MKV 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 after demonstrating sufficient maturity. The program will also be controlled through decision-based acquisition. An integrated Design Readiness Review will be conducted at the end of FY07 by the MDA Director to adjust out-year funding levels for the program in future budgets. The MKV system development prime contract was competitively awarded to Lockheed Martin Space Systems Company, Sunnyvale, CA, in FY04. The prime contract is an indefinite delivery / indefinite quantity type with a cost plus award fee pricing arrangement for individual task orders. Task Order 1 covered approximately one year of system development effort and culminated in the Hover Test Kill Vehicle (KV) Critical Design Review (CDR) in Mid-February 2005. Task Order 2 started in January 2005 and continued KV component and subsystem development with seeker, avionics, and propulsion breadboard and brassboard demonstrations. It completed in late November 2005. Task Order 3 was a six-week effort to fund a vendor proposal. It completed in March 2005. Task Order 4 started in October 2005 and will cover KV integration and hover test as well as carrier vehicle development. Subsequent task orders will be issued dependent on the contractor's performance.

The U. S. Army Space and Missile Defense Command, Huntsville, AL, manages the system development contract on behalf of the Missile Defense Agency as its Executing Agent.



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<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>						Date <b>February 2006</b>		
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<b>I. Product Development Cost ( \$ in Thousands )</b>								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Multiple Kill Vehicles</b>								
MKV System Development	CPAF	LMSSC/ Sunnyvale, CA & Dallas, TX	0	43,794	1Q	151,351	1Q	195,145
Subtotal Product Development			0	43,794		151,351		195145
<b>Remarks</b>								
<b>II. Support Costs Cost ( \$ in Thousands )</b>								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Multiple Kill Vehicles</b>								
Support Contracts	FFP	Sparta/ Arlington, VA	0	481	1Q	500	1Q	981
Support Contracts	FFP	Computer Sciences Corp/ Arlington, VA	0	700	1Q	700	1Q	1,400
Support Contracts	CPFF	Aero Thermo Technology/ Huntsville, AL	0	992	1Q	1,050	1Q	2,042
Support Contracts	CPFF	Gray Research/ Huntsville, AL	0	400	1Q	550	1Q	950
Support Contracts	CPAF	ITT/ Huntsville, AL	0	150	1Q	500	1Q	650

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<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>						Date <b>February 2006</b>		
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>					<b>R-1 NOMENCLATURE</b> <b>0603894C Multiple Kill Vehicle</b>			
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
Support Contracts	FFP	Science and Technology Associates/ Arlington, VA	0	317	1Q	334	1Q	651
Support Contracts	CPFF	Various/ Various	0	150	1Q	480	1Q	630
Support Contracts	FFRDC	Sandia/ Albuquerque, NM	0	100	1Q	250	1Q	350
Support Contracts	FFRDC	MIT/LL/ Lexington, MA	0	300	1Q	300	1Q	600
Subtotal Support Costs			0	3,590		4,664		8254
<b>Remarks</b> Base contract awarded January 2004. Task orders on the contract awarded approximately annually. Task order 2 awarded in 2Q of FY05, task order 3's targeted award date is 1Q FY06.								
<b>III. Test and Evaluation Cost ( \$ in Thousands )</b>								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Multiple Kill Vehicles</b>								
Government Test Support (Range Costs and GFE)	MIPR	NHTF, Pacific Missile Range & Vandenberg AFB/ HI & CA	0	60	1Q	3,530	1Q	3,590
Subtotal Test and Evaluation			0	60		3,530		3590
<b>Remarks</b> 								

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<b>Missile Defense Agency (MDA) Exhibit R-3 RDT&amp;E Project Cost Analysis</b>						Date <b>February 2006</b>		
<b>APPROPRIATION/BUDGET ACTIVITY</b> <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>					<b>R-1 NOMENCLATURE</b> <b>0603894C Multiple Kill Vehicle</b>			
<b>IV. Management Services Cost ( \$ in Thousands )</b>								
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award/ Oblg Date	FY 2007 Cost	FY 2007 Award/ Oblg Date	Total Cost
<b>Multiple Kill Vehicles</b>								
Management Support	Various	SMDC & Various/ Huntsville, AL & Various	0	1,880	1Q	2,705	1Q	4,585
Subtotal Management Services			0	1,880		2,705		4585
<b>Remarks</b>								
Project Total Cost			0	49,324		162,250		211,574
<b>Remarks</b> This project was previously funded in the BMD Technology Program Element, 0603175C within project 0502 in Engagement Systems.								

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Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile																	Date February 2006																	
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)													R-1 NOMENCLATURE 0603894C Multiple Kill Vehicle																					
Fiscal Year	2005				2006				2007				2008				2009				2010				2011									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Program Milestones																																		
Design Readiness Review												★					★				★					★								
System Engineering																																		
IPR							△				△															△		△						
System PDR																		△																
System CDR																										△								
Kill Vehicle																																		
Hover Test Kill Vehicle CDR		▲																																
Seeker Software CDR			▲																															
KV HWIL & Ground Test							△	△										△	△															
Kill Vehicle Flight Test Deliveries																			△	△														
Flight Test Kill Vehicle CDR																				△														
Kill Vehicle (KV) Flight Qual Tests																								△										
Kill vehicle integrated ground test																									△									
Carrier Vehicle																																		
Carrier Vehicle PDR																			△															
Develop algorithms for MKV																					△	△												
Legend																																		
▲ Significant Event (complete)														▲ Significant Event (planned)																				
★ Milestone Decision (complete)														★ Milestone Decision (planned)																				
◆ Element Test (complete)														◆ Element Test (planned)																				
◊ System Level Test (complete)														◊ System Level Test (planned)																				
△ Complete Activity														△ Planned Activity																				

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## Missile Defense Agency (MDA) Exhibit R-4 Schedule Profile

Date

February 2006

APPROPRIATION/BUDGET ACTIVITY

## R-1 NOMENCLATURE

**RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)**

## 0603894C Multiple Kill Vehicle

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail					Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603894C Multiple Kill Vehicle			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Program Milestones							
Design Readiness Review			4Q		2Q	3Q	3Q
System Engineering							
IPR		3Q	3Q				2Q,4Q
System PDR					2Q		
System CDR							2Q
Kill Vehicle							
Hover Test Kill Vehicle CDR	2Q						
Seeker Software CDR	3Q						
KV HWIL & Ground Test		3Q-4Q	1Q-4Q	1Q-3Q	3Q-4Q	1Q-4Q	1Q
Kill Vehicle Flight Test Deliveries						1Q-4Q	1Q-4Q
Flight Test Kill Vehicle CDR						2Q	
Kill Vehicle (KV) Flight Qual Tests						4Q	
Kill vehicle integrated ground test							1Q,1Q
Carrier Vehicle							
Carrier Vehicle PDR					3Q		
Develop algorithms for MKV					4Q	1Q-4Q	1Q-4Q
Carrier Vehicle CDR						2Q	
HWIL & Ground Test						2Q-4Q	3Q
Carrier Vehicle Flight Test Deliveries							1Q-4Q
Assembly, Integration and Test							
Hover Test					1Q		
KV FT 1							1Q-4Q
Program Management							
Contract Award (Annual Task Orders)	2Q	1Q	1Q	1Q	1Q	1Q	1Q
FY05 funded within the BMD Technology Program Element, 0603175C, Project 0515.							

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification					Date <b>February 2006</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, DW/04 Advanced Component Development and Prototypes (ACD&amp;P)</b>				R-1 NOMENCLATURE <b>0603894C Multiple Kill Vehicle</b>			
COST (\$ in Thousands)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0602 Program-Wide Support	0	1,000	2,725	6,905	840	690	917
RDT&E Articles Qty	0	0	0	0	0	0	0

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

Program-Wide Support provides funding for common non-headquarters support functions across the entire program such as strategic planning, program integration, business management, cost estimating, contracting, and financial management, to include preparation of financial statements, reimbursement of financial services provided by DFAS, internal review and audit, earned-value management, and program assessment. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Many of these costs reside within the Missile Defense Agency Executing Agents in the Services: Army Space and Missile Defense Command, Army PEO Space and Missile Defense, Office of Naval Research, and various Air Force laboratory and acquisition activities, although some functions and costs within this program element are performed by MDA employees assigned within the National Capital Region (NCR). Other costs included herein provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and training, office and equipment leases, utilities and communications, supplies and maintenance, and similar operating expenses. Also includes funding for charges on canceled appropriations in accordance with Public Law 101-510, legal settlements, and foreign currency fluctuation on a limited number of foreign contracts.

**B. Accomplishments/Planned Program**

	FY 2005	FY 2006	FY 2007
Civilian Salaries and Support	0	1,000	2,725
RDT&E Articles (Quantity)	0	0	0

See Section A: Mission Description and Budget Item Justification

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification						Date February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603894C Multiple Kill Vehicle				
C. Other Program Funding Summary								
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
PE 0603175C Ballistic Missile Defense Technology	224,016	162,297	197,707	192,034	203,946	212,106	218,002	1,410,108
PE 0603879C Advanced Concepts, Evaluations and Systems	166,996	0	0	0	0	0	0	166,996
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	914,063	1,198,860	1,037,203	878,540	615,005	731,692	482,362	5,857,725
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	4,487,253	2,489,257	2,605,567	2,444,109	2,065,344	1,979,612	1,617,059	17,688,201
PE 0603883C Ballistic Missile Defense Boost Defense Segment	472,543	490,863	632,028	567,493	493,842	615,859	988,731	4,261,359
PE 0603884C Ballistic Missile Defense Sensors	567,193	294,283	536,428	554,012	623,089	306,965	217,590	3,099,560
PE 0603886C Ballistic Missile Defense System Interceptors	272,064	215,952	438,287	634,709	1,138,597	1,391,301	1,499,204	5,590,114
PE 0603888C Ballistic Missile Defense Test and Targets	700,570	632,107	692,209	614,174	649,766	668,624	678,105	4,635,555
PE 0603889C Ballistic Missile Defense Products	384,935	394,652	521,640	517,507	534,429	530,893	531,219	3,415,275
PE 0603890C Ballistic Missile Defense System Core	398,852	420,151	558,231	557,880	561,003	548,354	554,731	3,599,202
PE 0603891C Special Programs - MDA	0	324,522	421,303	836,168	1,110,695	1,027,677	1,260,497	4,980,862
PE 0603892C Ballistic Missile Defense Aegis	0	939,066	990,565	857,832	900,265	933,815	816,206	5,437,749
PE 0603893C Space Tracking & Surveillance System	0	239,998	361,515	429,679	640,367	787,008	818,606	3,277,173
PE 0603895C BMD System Space Program	0	0	0	45,000	150,000	166,000	206,100	567,100
PE 0605502C Small Business Innovative Research - MDA	138,907	0	0	0	0	0	0	138,907
PE 0901585C Pentagon Reservation	11,001	17,386	15,586	6,058	6,376	4,490	4,725	65,622
PE 0901598C Management Headquarters - MDA	110,662	99,327	89,314	86,821	86,244	70,600	70,714	613,682
PE Air Force Military Personnel	0	3,628	7,640	8,332	8,535	8,826	9,129	46,090
PE Air Force Operations and Maintenance	17,600	7,964	11,712	33,830	33,080	34,119	35,398	173,703
PE Air Force Other Procurement	0	2,400	1,453	11,279	386	17,710	25,709	58,937
PE Army Operations and Maintenance	49,597	66,974	68,246	69,809	71,472	73,325	75,230	474,653
PE Army Natl Guard Military Personnel	21,000	17,648	24,432	24,952	25,591	25,591	25,591	164,805
PE Army Natl Guard Operations and Maintenance	0	155	151	150	154	164	167	941
PE Navy Operations and Maintenance	11,300	12,900	24,100	24,400	24,600	23,300	23,700	144,300
PE PAC-3/MEADS Missile Procurement	574,972	581,924	578,579	660,584	616,020	509,032	738,679	4,259,790
PE PAC-3/MEADS RDT&E	344,978	304,973	336,959	465,395	521,791	522,418	502,961	2,999,475

Project: 0602 Program-Wide Support

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MDA Exhibit R-2A (PE 0603894C)