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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603897C: <i>BMD HERCULES</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
<i>WX02: Hercules Capability Development</i>	51.413	46.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	97.517
<i>ZX40: Program-Wide Support</i>	0.216	1.828	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	2.044

Note

Beginning in FY 2010, Project Hercules will be allocated to five Strategic Technology Portfolios (STPs): persistent sensors; pervasive weapons; global battle management; effective targeting; and effectiveness in adverse environments.

For FY 2010, Additional funding for Enhanced Command and Control, Battle Management, and Communications (C2BMC) is located in Program Element 0603896C, BMDS C2BMC, and in Program Element 0603892C, BMD AEGIS.

Beginning in FY 2011, software and algorithm work will be moved to the BMDS Technology Program Element 0603175C. In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project WX02 for FY 2009-FY 2010 is now captured in Project MD25.

A. Mission Description and Budget Item Justification

A robust advanced missile defense technology development program is part of the MDA strategy to hedge against future threat uncertainties. During FY 2010, the agency will implement a technology development program that emphasized investments in early intercept capability while continuing to pursue technologies to address the more sophisticated threats we expect to address in the far term. Consistent with this approach, the far term Hercules focus was shifted to algorithm and software development necessary to effectively execute early intercepts. The Hercules Program Element develops and demonstrates algorithms and software to execute this strategy. Beginning in FY 2010, Project Hercules efforts were allocated to five Strategic Technology Portfolios: persistent sensors; pervasive weapons; global battle management; effective targeting; and effectiveness in adverse environments. MDA is focusing its Hercules efforts among each strategic portfolio for the development and demonstration of an integrated set of technologies that allows us to intercept early in the battle space and optimize our ability to execute a shoot-look-shoot tactic, to force less effective deployment of counter-measures, minimize the potential impact of debris, and reduce the number of interceptors required to defeat a raid of threat missiles.

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Hercules has three major goals:

- Develop, deliver, and support integration of algorithms and software to execute early intercept concepts and demonstrations.
- Develop, deliver, and support integration of algorithms and software to improve the performance of radar and electro-optical sensors.
- Develop, deliver, and support integration of algorithms and software for advanced battle management and decision making concepts.

B. Program Change Summary (\$ in Millions)

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	55.764	48.186	0.000	0.000	0.000
Current President's Budget	51.629	47.932	0.000	0.000	0.000
Total Adjustments	-4.135	-0.254	0.000	0.000	0.000
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-0.254			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-3.305	0.000			
• SBIR/STTR Transfer	-0.830	0.000			
• Other Adjustment Detail	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

MDA Programmatic Changes:

FY 2009 decrease is a result of MDA programmatic changes.

No FY 2011 data provided in PB10.

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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
<i>WX02: Hercules Capability Development</i>	51.413	46.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	97.517
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Our submission reflects a greater emphasis on defense of U.S. forces, allies, and friends from regional threats posed by thousands of short- and medium-range ballistic missiles. The most cost-effective missile defense architecture is one that emphasizes early intercepts during a threat missile's early phase of flight. Early intercepts can be observed by the BMDS sensors to determine if a second or third intercept attempt is necessary to achieve a robust degree of protection. Additionally, early intercepts forces the threat to deploy countermeasures early, making them more difficult to be effective. MDA plans to demonstrate the maturity of early intercept concept by conducting a series of live-fire tests in FY 2012 to enable thorough operational assessment and proof of sufficient Quality of Service for this capability. These demonstrations will prove the early intercept concept key functions: Overhead persistent infrared for initial tracking in flight, unmanned aerial vehicle or Space Tracking and Surveillance System demonstration satellites for post-boost tracking, the battle management command and control, and Standard Missile-3 Block IA/B for engagements.

The emphasis of Hercules will be to develop algorithms and software in the context of persistent sensor coverage, pervasive weapons coverage, global battle management, effective targeting, and effectiveness in advance environments for Strategic Technology Portfolios (STP) and early intercept capability demonstration managed by MDA's Advanced Technology Directorate. Hercules develops robust, physics-based detection, tracking, discrimination, and decision making prototype algorithms to improve the performance of command and control, battle management, communications, sensor, and weapon components. These algorithms and software are critical in keeping pace with the evolving threat.

B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Systems Level R&D See Description Below	8.850	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2009 Accomplishments:</i> The Systems Team applies advanced decision theory to improve real-time BMDS command and control, battle management, and communications (C2BMC) capability. The Systems Team develops multi-sensor tracking and discrimination algorithms providing robust system level tracking and decision aids. The coordinated sensor and weapon management development effort provides decision aids to the missile defense commander to improve management of different BMDS sensors and weapons. These capabilities will lead to better situational awareness, discrimination, sensor resource allocation, and weapon magazine.</p> <p>Started expansion of target selection capability to include Hercules-developed lethal region identification capability. Continued development of enhanced tracking, correlation, and discrimination algorithms to include volumetric approaches. Continued development of weapon and sensor resource management algorithms.</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Platform Level R&D See Description Below		11.772	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2009 Accomplishments:</i> The Platform Team develops algorithms for application on individual sensor or weapons to enhance performance of the host mission and/or provide additional levels of information for systems level processing (forward based and midcourse discrimination, tracking, correlation, handover, clutter mitigation, resource management). These algorithms will improve surveillance and fire control sensor performance, provide additional discrimination data, and increase resistance to clutter. Kill vehicle algorithms will improve hand over, tracking, on board discrimination and resistance to clutter.</p> <p>Continued development and testing of future kill vehicle seeker systems engagement management algorithms. Initiated transition project for Standard Missile 3 (SM-3) seeker enhancement algorithms. Conducted Aegis BMD algorithm integration. Initiated development of enhanced algorithms for detection and tracking in advanced radio frequency clutter. Initiated effort to improve initial clutter mitigation capability in response to joint engineering effort and digital test effort.</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
Evaluation and Testing				18.319	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Evaluation and Maturation Team supports all Hercules development by providing an independent evaluation capability via digital testing within Hercules and mechanisms for live-time demonstration of algorithms. Additionally, the Evaluation and Maturation Team supports system engineering functions with the BMDS elements to facilitate algorithm transition into a fielded system. The Evaluation and Maturation Team also generates realistic, simulated threat data for algorithm development and provides threat data to Hercules developers, BMDS elements, and other DoD users.</p> <p>Developed and delivered evolving threat data packages to support algorithm development and capability insertion. Completed procurement of an additional sidecar for new BMD test range sensor. Conducted digital characterization testing of algorithms to support development and transition. Conducted quarterly algorithm technical reviews.</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Phenomenology Testing See Description Below		12.472	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> The FY 2010 emphasis will be on the technologies within each Strategic Technology Portfolios (STPs) that enable early intercept fire control and command, control, communications, and battle management capabilities. Investment in the next generation and game changing technologies will continue with an emphasis on efforts enabling or improving the early engagement capability.</p> <p>STP 1 - Persistent Sensor Coverage - Electro-optical and infrared and radio frequency technologies for persistent sensor coverage. Hercules is developing advanced algorithms for: sensor-to-sensor correlation to help mitigate the effects of sensor coverage gaps, sensor-to-kill vehicle handover for transition of discrimination data to the kill vehicle, and expanding sensor performance to reduce gaps and measure new features. These algorithms enable and support system level multi-sensor data integration functions for system tracking, discrimination, and battle management. This includes approaches and techniques for system level tracking using data from multiple sensors using different phenomenology that address ambiguity management and global genealogy.</p> <p>Continue development of discrimination algorithms that exploit unique opportunities in Electro-optical and Infrared.</p> <p>STP 2 - Pervasive Weapons Coverage - Directed energy and interceptor technologies to enable early engagements. Hercules is developing forward based sensor discrimination algorithms exploiting unique opportunities existing in boost and early ascent of the threat. These algorithms support and enable early engagements by allowing earlier decisions which helps reduce hardware performance requirements.</p>					

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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> This includes the management of the Strategic Technology Portfolios ;and technology program analysis. This effort is comprised of entirely Program Management costs associated with Advanced Technology development, no article quantities are reported.</p> <p>Funds government personnel salaries for program management, project support, project costs and travel. Support activities for technology development. Conduct individual testing of algorithms across Project Hercules.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	51.413	46.104	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603175C: <i>Ballistic Missile Defense Technology</i>	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>											
• 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922
• 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
• 0603891C: <i>SPECIAL PROGRAMS - MDA</i>	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: <i>BMD AEGIS</i>	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919
• 0603893C: <i>SPACE TRACKING & SURVEILLANCE SYSTEM</i>	209.831	161.609	112.678	0.000	112.678	98.500	56.424	52.928	34.661	0	726.631
• 0603894C: <i>MULTIPLE KILL VEHICLE</i>	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: <i>BMD SYSTEM SPACE PROGRAM</i>	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: <i>BMD C2BMC</i>	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603898C: <i>BMD JOINT WARFIGHTER SUPPORT</i>	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186
• 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603904C: <i>MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)</i>	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: <i>REGARDING TRENCH</i>	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
• 0603907C: <i>SEA BASED X-BAND RADAR (SBX)</i>	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: <i>BMD European Comm Support</i>	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
• 0603913C: <i>ISRAELI COOPERATIVE</i>	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545
• 0604880C: <i>LAND-BASED SM-3</i>	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387
• 0604883C: <i>PRECISION TRACKING SPACE SYSTEM</i>	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: <i>AIRBORNE INFRARED (ABIR)</i>	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: <i>Small Business Innovative Research BMDO</i>	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: <i>Pentagon Reservation</i>	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337
	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u> <u>Base</u>	<u>FY 2011</u> <u>OCO</u>	<u>FY 2011</u> <u>Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0901598C: <i>Management Headquarters-MDA</i>											

D. Acquisition Strategy

MDA's fiscal year FY 2010 budget submission reflected an emphasis on early intercept research and development. The acquisition strategy to conduct this technology development effort consists of three pillars. First, leverage the technical expertise of Federally Funded Research and Development Centers and University Applied Research Centers. Second, continue to leverage relevant existing contracts within limits of Competition and Contracting Act (CICA) taking into account contractor past performance, scope, ceiling and period of performance. Third, for new technology initiatives, seek industry solutions via the Advanced Technology Broad Agency Announcement and competitive procurements.

MDA will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System (BMDS) mission. The objectives are to implement national engineering and support services for the BMDS mission across the enterprise, enhance the sharing of ballistic missile defense expertise and knowledge across the agency, centralize the acquisition of support services manpower in a more efficient manner and reduce agency overhead costs enterprise-wide. A&AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.

E. Performance Metrics

NA

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency										DATE: February 2010			
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Product Development (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Level R&D Algorithm Development WX02	C/CPFF	Various Various	34.610	0.000		0.000		0.000		0.000	0	34.610	34.610
Platform Level R&D Algorithm Development WX02	TBD/TBD	Various Various	57.791	0.000		0.000		0.000		0.000	0	57.791	57.791
Hercules Technology Development Algorithm Development WX02	C/Various	Various See Remarks	0.000	24.962	Jul 2010	0.000		0.000		0.000	0	24.962	25.165
Subtotal			92.401	24.962		0.000		0.000		0.000	0.000	117.363	117.566

Remarks

Performing Activity and/or Vendor: Johns Hopkins University - Applied Physics Laboratory (APL), Boeing, Lockheed Martin (LM), Massachusetts Institute of Technology Lincoln Laboratory (MIT/LL), Northrop Grumman (NG), National Air and Space Intelligence Center (NASIC), Naval Surface Warfare Center Corona (NSWC-Corona), Raytheon, Sandia National Lab (SNL), SEG, Sparta, and other small businesses on a case by case basis.

Support (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Evaluation and Testing Algorithm Development WX02	C/Various	Sparta Huntsville, AL	14.800	0.000		0.000		0.000		0.000	0	14.800	14.800
	C/Various	Various	0.000	3.810	Oct 2009	0.000		0.000		0.000	0	3.810	3.810

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603897C: <i>BMD HERCULES</i>	PROJECT WX02: <i>Hercules Capability Development</i>
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Support (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hercules Technology Development Algorithm WX02		Various											
Program Office Algorithm Development WX02	C/Various	Sparta Huntsville, AL	0.000	14.292	Oct 2009	0.000		0.000		0.000	0	14.292	14.343
Subtotal			14.800	18.102		0.000		0.000		0.000	0.000	32.902	32.953

Remarks

NA

Test and Evaluation (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Evaluation and Testing Evaluation and Testing WX02	C/Various	Various (see Remark 1) Various	60.272	0.000		0.000		0.000		0.000	0	60.272	60.272
Phenomenology Testing Phenomenology Testing WX02	C/Various	Various (see Remark 2) Various	41.058	0.000		0.000		0.000		0.000	0	41.058	41.058
Hercules Technology Development Evaluation and Testing WX02	C/Various	Various (see remarks 1&2) Various	0.000	3.040	Oct 2009	0.000		0.000		0.000	0	3.040	3.040

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Test and Evaluation (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			101.330	3.040		0.000		0.000		0.000	0.000	104.370	104.370

Remarks

- U.S. Army Space and Missile Defense Command/Huntsville AL (FY 2008), MDA/Huntsville (FY 2009-FY 2011), Massachusetts Institute of Technology Lincoln Laboratory/ Burlington, MA, Air Force Research Laboratory/Eglin AFB
- U.S. Army Space and Missile Defense Command/Huntsville AL (FY 2008), MDA/Huntsville (FY 2009-FY 2011), Massachusetts Institute of Technology Lincoln Laboratory/ Burlington, MA

Management Services (\$ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

Project Cost Totals	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
		Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
	208.531	46.104		0.000		0.000		0.000	0.000	254.635	254.889

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	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks NA									

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603897C: <i>BMD HERCULES</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
ZX40: <i>Program-Wide Support</i>	0.216	1.828	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	2.044
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

A. Mission Description and Budget Item Justification

Program-Wide Support provides funding for common non-headquarters support functions across the entire program. Includes costs for both government civilians performing these functions, as well as outside services and support contractors that augment government staff in these areas. Other costs included provide facility capabilities for MDA Executing Agent locations (with the exception of Federal Office Building 2), 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 fluctuations on a limited number of foreign contracts.

B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Civilian Salaries and Support See Description Below <i>FY 2009 Accomplishments:</i> See Section A: Mission Description and Budget Item Justification ; <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA	0.216	1.828	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603897C: <i>BMD HERCULES</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: NA					
Accomplishments/Planned Programs Subtotals	0.216	1.828	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0603175C: <i>Ballistic Missile Defense Technology</i>	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	0	3,713.314
• 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	1,472.683	1,027.371	1,346.181	0.000	1,346.181	1,112.655	1,291.790	1,099.029	1,033.213	0	8,382.922
• 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
• 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	906.952	823.333	1,113.425	0.000	1,113.425	1,105.959	951.371	871.929	829.608	0	6,602.577
• 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
• 0603891C: <i>SPECIAL PROGRAMS - MDA</i>	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858
• 0603892C: <i>BMD AEGIS</i>	1,054.323	1,435.717	1,467.278	0.000	1,467.278	1,021.878	1,112.668	1,076.739	923.316	0	8,091.919

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency										DATE: February 2010	
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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0603893C: <i>SPACE TRACKING & SURVEILLANCE SYSTEM</i>	209.831	161.609	112.678	0.000	112.678	98.500	56.424	52.928	34.661	0	726.631
• 0603894C: <i>MULTIPLE KILL VEHICLE</i>	226.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	226.027
• 0603895C: <i>BMD SYSTEM SPACE PROGRAM</i>	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117
• 0603896C: <i>BMD C2BMC</i>	275.174	334.734	342.625	0.000	342.625	364.085	289.778	323.922	298.936	0	2,229.254
• 0603898C: <i>BMD JOINT WARFIGHTER SUPPORT</i>	66.283	61.098	68.726	0.000	68.726	62.239	63.451	65.158	67.231	0	454.186
• 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	0	512.221
• 0603904C: <i>MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)</i>	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
• 0603906C: <i>REGARDING TRENCH</i>	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553
• 0603907C: <i>SEA BASED X-BAND RADAR (SBX)</i>	143.878	167.153	153.056	0.000	153.056	150.104	159.832	160.163	197.099	0	1,131.285
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226
• 0603912C: <i>BMD European Comm Support</i>	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016
• 0603913C: <i>ISRAELI COOPERATIVE</i>	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545
• 0604880C: <i>LAND-BASED SM-3</i>	0.000	0.000	281.378	0.000	281.378	345.937	187.062	93.456	139.595	0	1,047.428

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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u> <u>Base</u>	<u>FY 2011</u> <u>OCO</u>	<u>FY 2011</u> <u>Total</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387
• 0604883C: <i>PRECISION TRACKING SPACE SYSTEM</i>	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932
• 0604884C: <i>AIRBORNE INFRARED (ABIR)</i>	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 0605502C: <i>Small Business Innovative Research BMDO</i>	124.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	124.788
• 0901585C: <i>Pentagon Reservation</i>	20.146	19.709	20.482	0.000	20.482	0.000	0.000	0.000	0.000	0	60.337
• 0901598C: <i>Management Headquarters-MDA</i>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

NA

E. Performance Metrics

NA

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