

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2015 Missile Defense Agency **Date:** March 2014

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	-	70.000	25.639	-	25.639	33.171	37.348	38.454	54.256	Continuing	Continuing
MD85: <i>Common Kill Vehicle Technology</i>	-	-	70.000	24.327	-	24.327	31.337	35.058	35.519	49.595	Continuing	Continuing
MD40: <i>Program Wide Support</i>	-	-	-	1.312	-	1.312	1.834	2.290	2.935	4.661	Continuing	Continuing

**MDAP/MAIS Code:** 362

# The FY 2015 OCO Request will be submitted at a later date.

**Note**

Beginning in FY 2014, the Common Kill Vehicle technology effort was transferred from the Ballistic Missile Defense Technology Program Element, 0603175C, to the Common Kill Vehicle Technology Program Element, 0603294C, per the FY 2014 Consolidated Appropriations Act (P.L. 113-76).

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

On 15 March 2013, the Secretary of Defense announced steps to bolster protection of the homeland and stay ahead of long range ballistic missile threats. These steps included adding Ground-Based Interceptors (GBI), restructuring the Standard Missile-3 Block IIB program and shifting resources to develop advanced kill vehicle technology to improve all ballistic missile defense interceptors that operate outside the earth's atmosphere.

The Agency is defining the concepts for the redesign of the Agency's Exo-atmospheric Kill Vehicles (EKVs) with modular, open architecture and designed to common interfaces and standards, making upgrades easier and broadening our vendor and supplier base.

With the recognition that the threat from our potential adversaries is growing in number and complexity, the Agency is taking a phased approach to common kill vehicle technology. In Phase I, investments focus on mature technology and concept design to enable the replacement of EKV's in our current Ground-Based Interceptor force with a more capable, testable, reliable, producible, scalable and cost effective kill vehicle.

Phase II evolves kill vehicle capabilities, relying on a Ballistic Missile Defense System (BMDS) architecture that balances performance across the sensor, Command, Control, Battle Management and Communications (C2BMC) and kill vehicle elements, improving BMDS discrimination and potentially adding capability to destroy several objects within a threat complex with multiple kill vehicles. The Agency anticipates deploying these capabilities across the interceptor fleet in the next decade to address the evolving threat. In FY 2015, we will focus on maturing key technology and defining the system architecture necessary for the acquisition of multi-object kill vehicles.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2015 Missile Defense Agency	<b>Date:</b> March 2014
---	-------------------------

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>
---	---

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015 Base</b>	<b>FY 2015 OCO</b>	<b>FY 2015 Total</b>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	70.000	25.639	-	25.639
Total Adjustments	-	70.000	25.639	-	25.639
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	70.000			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-	-	25.639	-	25.639

**Change Summary Explanation**

Beginning in FY 2014, the Common Kill Vehicle technology effort was transferred to Common Kill Vehicle Technology Program Element, 0603294C, per the FY 2014 Consolidated Appropriations Act (P.L. 113-76). Prior work was accomplished in the Standard Missile-3 Block IIB Program Element, 0603902C.

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2015 Missile Defense Agency **Date:** March 2014

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</i>
--	---	--

COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
<i>MD85: Common Kill Vehicle Technology</i>	-	-	70.000	24.327	-	24.327	31.337	35.058	35.519	49.595	Continuing	Continuing

# The FY 2015 OCO Request will be submitted at a later date.

**Note**

N/A

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

Capitalizing on the creativity of our industrial base, this effort is refining kill vehicle technology concepts with three prime contractors, Boeing, Lockheed Martin and Raytheon, in conjunction with a government-led, Ballistic Missile Defense System (BMDS)-wide, independent systems engineering assessment. The contractors will present their initial design concepts and recommendations for Phase I, followed by a final concept review in 2014.

The Agency will use the results of the contractors' concept definition efforts and the government engineering assessment to inform a Ground-based Midcourse Defense (GMD) acquisition strategy for the selection of redesigned Exoatmospheric Kill Vehicles (EKVs) for the Ground-Based Interceptors (GBI). The joint government-contractor systems engineering assessment will provide a solid foundation to provide a more capable, reliable, producible and testable redesign for the present EKV while shaping the Agency's technology investments for Phase II and our future Ground Based Interceptors and Standard Missile-3 fleets.

In FY 2015, the Agency will focus investments on kill vehicle technology risk reduction efforts:

- Improve focal plane array producibility
- Improve inertial measurement unit performance, size, weight, and power
- Develop kill vehicle-to-kill vehicle communication technology enhancements
- Improve lethality
- Propulsion research
- Improve capability to integrate kill vehicle and off-board system discrimination data

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2013	FY 2014	FY 2015
<b>Title:</b> Common Kill Vehicle	-	70.000	24.327
<b>Description:</b> The Missile Defense Agency is developing common kill vehicle technology to address emerging threats and enable the missile defense of our homeland.			
<b>FY 2013 Accomplishments:</b>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2015 Missile Defense Agency		<b>Date:</b> March 2014
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>
FY 2013 accomplishments are captured in the Standard Missile - 3 Block IIB Program Element (0603902C).			
<p><b>FY 2014 Plans:</b> We are executing key tasks focused on developing common kill vehicle technology for both the Ground-Based Interceptor (GBI) and Standard Missile-3 (SM-3) missiles to address the evolving and future threat. These investments in a common kill vehicle approach will help ensure the viability of our homeland ballistic missile defenses.</p> <p>Specifically, we plan to:</p> <ul style="list-style-type: none"> <li>- Make near term investments in interceptor technology that accelerate our ability to use a common kill vehicle in a way that balances lethal object discrimination, limited inventory and cost per kill</li> <li>- Define a kill vehicle architecture, common component interfaces, and standards that streamline modifications to kill vehicles that improves performance while broadening the vendor base for future upgrades</li> <li>- Invest in key technology development areas to increase probability of kill and reliability of interceptors, including propulsion, inertial and alternative navigation, power and sensor components</li> <li>- Focus technology investments on kill vehicle component and sub-systems that support long range acquisition and discrimination, long operation times, multiple discreet events, precision attitude control, safe operation and minimal kill vehicle mass</li> </ul> <p><b>FY 2015 Plans:</b> This effort will focus on technology risk reduction</p> <ul style="list-style-type: none"> <li>- Improve focal plane array producibility</li> <li>- Improve inertial measurement unit performance, size, weight, and power</li> <li>- Develop kill vehicle-to-kill vehicle communications technology enhancements</li> <li>- Improve lethality</li> <li>- Invest in other technology as arises</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	-	70.000	24.327

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 0603175C: <i>Ballistic Missile Defense Technology</i>	69.438	9.321	38.800	-	38.800	76.400	52.000	112.800	178.000	-	536.759
• 0603176C: <i>Advanced Concepts and Performance Assessment</i>	-	6.919	8.470	-	8.470	10.683	10.867	11.687	11.994	Continuing	Continuing

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2015 Missile Defense Agency **Date:** March 2014

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD85 / <i>Common Kill Vehicle Technology</i>
--	---	--

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

<b>Line Item</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015 Base</b>	<b>FY 2015 OCO</b>	<b>FY 2015 Total</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 0603177C: <i>Discrimination Sensor Technology</i>	-	29.642	45.110	-	45.110	59.278	60.054	62.897	21.051	Continuing	Continuing
• 0603178C: <i>Weapons Technology</i>	-	46.708	14.068	-	14.068	36.494	46.026	56.037	83.722	Continuing	Continuing
• 0603180C: <i>Advanced Research</i>	-	19.188	16.584	-	16.584	16.715	16.924	18.336	18.723	Continuing	Continuing
• 0603881C: <i>Ballistic Missile</i>	267.396	255.918	299.598	-	299.598	221.008	288.405	286.421	273.365	Continuing	Continuing
<i>Defense Terminal Defense Segment</i>											
• 0603882C: <i>Ballistic Missile Defense Midcourse Defense Segment</i>	923.506	910.852	1,003.768	-	1,003.768	1,131.060	937.998	690.524	628.342	Continuing	Continuing
• 0603884C: <i>Ballistic Missile Defense Sensors</i>	306.896	366.590	392.893	-	392.893	462.030	448.763	403.272	368.125	Continuing	Continuing
• 0603892C: <i>AEGIS BMD</i>	958.506	909.928	929.208	-	929.208	955.825	911.095	866.678	721.426	Continuing	Continuing
• 0603893C: <i>Space Tracking and Surveillance System</i>	45.420	40.347	31.346	-	31.346	33.697	34.542	35.317	36.316	Continuing	Continuing
• 0603896C: <i>Ballistic Missile Defense Command and Control, Battle Management &amp; Communication</i>	344.431	405.319	443.484	-	443.484	456.182	462.525	452.937	465.638	Continuing	Continuing
• 0603907C: <i>Sea Based X-Band Radar (SBX)</i>	23.703	44.478	64.409	-	64.409	57.081	58.975	64.759	63.016	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy consists of three focus areas. First, leverage the technical expertise of Federally Funded Research and Development Centers, University Applied Research Centers, and Universities and government laboratories. Second, conduct risk reduction activities to identify and mature the technology necessary to increase the reliability and performance of our kill vehicles using the Advanced Technology Innovation Broad Agency Announcement and competitive procurements. Third, through competition with missile integration contractors, development of a common kill vehicle architecture and interfaces with follow on competitive design of multi-object kill concepts incorporating lightweight kill vehicles and enhanced discrimination capability.

**E. Performance Metrics**

N/A

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2015 Missile Defense Agency **Date:** March 2014

<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
--	---	--

COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
MD40: <i>Program Wide Support</i>	-	-	-	1.312	-	1.312	1.834	2.290	2.935	4.661	Continuing	Continuing

# The FY 2015 OCO Request will be submitted at a later date.

**Note**

N/A

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

Program-Wide Support (PWS) contains non-headquarters management costs in support of Missile Defense Agency (MDA) functions and activities across the entire Ballistic Missile Defense System (BMDS). It includes Government Civilians, Contract Support Service, and Federally Funded Research and Development Center (FFRDC) providing integrity and oversight of the BMDS as well as, supporting MDA in enabling the development and evaluation of technologies that will respond to the changing threat. In addition, includes Global Deployment personnel and support performing deployment site preparation and activation. Other costs included provide facility capabilities for MDA Executing Agent locations, such as physical and technical security, legal services, travel and agency training, office and equipment leases, utilities, data and unified communications support, supplies and maintenance, materiel and readiness and central property management of equipment, and similar operating expenses. Also includes legal settlements. In keeping with congressional intent, Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the total MDA budget.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2013	FY 2014	FY 2015
<b>Title:</b> Program Wide Support	-	-	1.312
<b>Description:</b> N/A			
<b>FY 2013 Accomplishments:</b> See paragraph A: Mission Description and Budget Item Justification.			
<b>FY 2014 Plans:</b> N/A			
<b>FY 2015 Plans:</b> See paragraph A: Mission Description and Budget Item Justification.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	1.312

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

N/A

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2015 Missile Defense Agency		<b>Date:</b> March 2014
<b>Appropriation/Budget Activity</b> 0400 / 3	<b>R-1 Program Element (Number/Name)</b> PE 0603294C / <i>Common Kill Vehicle Technology</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>

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

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A