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

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>
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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	-	-	6.919	8.470	-	8.470	10.683	10.867	11.687	11.994	Continuing	Continuing
MD71: <i>Advanced Concepts and Performance Assessments</i>	-	-	6.919	7.986	-	7.986	10.092	10.201	10.897	11.138	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	-	-	-	0.484	-	0.484	0.591	0.666	0.790	0.856	Continuing	Continuing

MDAP/MAIS Code: 362

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

Note

Beginning in FY 2014, the Advanced Concepts and Performance Assessments effort was transferred from the Ballistic Missile Defense Technology Program Element 0603175C to the Advanced Concepts and Performance Assessments Program Element 0603176C, per the FY 2014 Consolidated Appropriations Act (P.L. 113-76).

A. Mission Description and Budget Item Justification

The Advanced Concepts & Performance Assessments (ACPA) Program delivers an integrated government concept definition, simulation, and analysis capability and centralizes assessment activities of advanced Ballistic Missile Defense (BMD) technology. Providing insight into the performance of proposed concepts extends Missile Defense Agency's (MDA) ability to address evolving threats for the warfighter.

To rapidly assess innovative technology concepts, cutting-edge data-collection methods, advanced modeling techniques, hardware-in-the-loop testbeds, and high-performance computing platforms are developed by working directly with universities, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), and small businesses.

Subject matter experts provide independent assessments of government, university, and industry technology concepts, which are used in concert with systems engineering requirements to support acquisition strategy decisions and define technology focus areas. Structured concept definition and assessment methodologies enable analysts to quickly validate technology focus areas, verify contractor technology solutions and models, and evaluate promising concepts in candidate future Ballistic Missile Defense System (BMDS) architectures.

ACPA initiatives identify algorithms, models, and mathematical relationships that, when combined in integrated simulations characterize component/system key parameters and define performance expectations for all Advanced Technology programs. This methodology was proved successful in the analyses of the Standard Missile-3 Block IIB program, where independent government analysts were able to process modeled concepts from industry to analyze their contributions to the BMDS. This Better Buying Power philosophy has been incorporated and applied to the earliest stages of technology development to maximize technology investments in a limited budget environment.

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B. Program Change Summary (\$ in Millions)	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	6.919	8.470	-	8.470
Total Adjustments	-	6.919	8.470	-	8.470
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	6.919			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-	-	8.470	-	8.470

Change Summary Explanation

Beginning in FY 2014, the Advanced Concepts and Performance Assessments effort was transferred from the Ballistic Missile Defense Technology Program Element 0603175C to the Advanced Concepts and Performance Assessments Program Element 0603176C, per the FY 2014 Consolidated Appropriations Act (Public Law 113-76).

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

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>	Project (Number/Name) MD71 / <i>Advanced Concepts and Performance Assessments</i>
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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
MD71: <i>Advanced Concepts and Performance Assessments</i>	-	-	6.919	7.986	-	7.986	10.092	10.201	10.897	11.138	Continuing	Continuing

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

Note

Beginning in FY 2014, the Advanced Concepts and Performance Assessments effort was transferred from the Ballistic Missile Defense Technology Program Element 0603175C to the Advanced Concepts and Performance Assessments Program Element 0603176C, per the FY 2014 Consolidated Appropriations Act (Public Law 113-76).

A. Mission Description and Budget Item Justification

Advanced Concepts & Performance Assessment centralizes all Advanced Technology concept modeling, simulation, software, and analysis efforts. Combining models of promising technical solutions into BMDS system-level simulations, Advanced Concepts & Performance Assessment enables leadership to make data driven acquisition and technology investment decisions.

This effort capitalizes on the innovation of small business, universities, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC) to pursue a broad range of hardware, software, models, algorithms, and assessment capabilities. These capabilities are used to assess sensor and weapon system concepts in BMDS architectures. These assessments bring together government developed models representing existing and future ballistic missile defense architectures, technology concepts, and advanced algorithms to provide detailed assessments of concept performance and support investment decisions.

These initiatives combined with a robust high performance computing infrastructure provide a unique government owned capability to demonstrate and assess technology concepts.

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

	FY 2013	FY 2014	FY 2015
Title: Advanced Concepts and Performance Assessment	-	6.919	7.986
Description: Advanced Concepts and Performance Assessment's diverse staff of subject matter experts develops advanced concepts across the broad spectrum of Ballistic Missile Defense (BMD) Technology initiatives.			
- Prioritize technology investments and inform requirements - Develop and extend modeling techniques - Demonstrate concept performance against evolving threats			
FY 2013 Accomplishments:			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>FY 2013 accomplishments are captured in the BMD Technology Program Element, 0603175C.</p> <p>FY 2014 Plans:</p> <ul style="list-style-type: none"> - Provide scenario assessments highlighting the capability of advanced sensors in Homeland defense, deriving preliminary advanced sensor top-level mission requirements and blue force laydowns, and to generate Government Furnished Information (GFI) products for the Common Kill Vehicle (CKV) technology contractors - Work with the Ballistic Missile Defense System (BMDS) Architect and Systems Engineer to define realistic concepts for the future BMDS - Assess technology for next generation interceptors and kill vehicles, advanced discriminating sensors, and directed energy systems - Identify promising technology investment opportunities - Focus research and engineering activities from university and small business partners through a rapid innovation model based engineering test bed - Reduce time to translate innovative technology into BMDS capability by integrating models of emerging concepts that characterize key parameters and expected performance <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Work with the Ballistic Missile Defense System (BMDS) Architect and Systems Engineer to provide realistic assumptions, design concepts, models and assessments for technology items included within the future BMDS, elements, and component concepts - Provide technology concepts, models and assessments for kill vehicles, discrimination sensors, space alternatives and directed energy systems - Mature tracking, discrimination, and sensor fusion algorithms - Demonstrate precision track through simulation exercises - Accelerate assessment of hardware and algorithms for space alternative sensors - Focus research and engineering activities from university and small business partners to identify suitable technology and concepts that improve Ballistic Missile Defense System (BMDS) performance through a rapid innovation model based engineering test bed - Reduce time to translate innovative technology into BMDS capability by providing integrated models of emerging concepts that characterize key parameters and expected performance 				
Accomplishments/Planned Programs Subtotals		-	6.919	7.986

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

Line Item	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
• 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
• 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
• 0603294C: <i>Common Kill Vehicle Technology</i>	-	70.000	25.639	-	25.639	33.171	37.348	38.454	54.256	Continuing	Continuing

Remarks

D. Acquisition Strategy

Advanced Concepts and Performance Assessment utilizes an acquisition strategy that continues its successful partnerships with Small Business, the Aviation & Missile Research Development & Engineering Center (AMRDEC), Federally Funded Research and Development Centers (FFRDCs) and University Affiliated Research Centers (UARCs) to provide concept modeling and assessment capabilities. This effort leverages agency and partner subject matter experts and government model based assessments to inform Better Buying Power acquisition decisions.

E. Performance Metrics

N/A

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Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603176C / <i>Advanced Concepts and Performance Assessment</i>				Project (Number/Name) 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>	-	-	-	0.484	-	0.484	0.591	0.666	0.790	0.856	Continuing	Continuing

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

Note

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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
Title: Program Wide Support	-	-	0.484
Description: See paragraph A: Mission Description and Budget Item Justification			
FY 2013 Accomplishments: N/A			
FY 2014 Plans: N/A			
FY 2015 Plans: See paragraph A: Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	-	-	0.484

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C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		