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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604873C I Long Range Discrimination Radar (LRDR)							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	50.500	137.564	-	137.564	154.327	147.562	132.905	77.679	Continuing	Continuing
MD96: Long Range Discrim Radar (LRDR)	-	-	50.500	131.514	-	131.514	147.031	140.005	125.825	73.471	Continuing	Continuing
MD40: Program Wide Support	-	-	-	6.050	-	6.050	7.296	7.557	7.080	4.208	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note Beginning in FY 2015, funding was realigned to the Long Range Discrimination Radar (LRDR) Program Element 0604873C, Project MD96, from Ballistic Missile Defense Sensors Program Element 0603884C, Project MD96. The FY 2016 increase reflects a ramp up for hardware and software design/development efforts, conducting the Preliminary Design Review and initiating procurement of long-lead items for the Long Range Discrimination Radar (LRDR). <u>A. Mission Description and Budget Item Justification</u> The Ballistic Missile Defense (BMD) Vision Study, conducted by Missile Defense Agency (MDA) with United States Strategic Command (USSTRATCOM), identified the need to enhance the discrimination capabilities of our sensors and weapon systems. One of the critical areas identified in the study to be addressed by the future BMDS was the need to provide a more robust discrimination capability to support the defense of the Homeland. As part of the Ballistic Missile Defense System (BMDS) Integrated Discrimination strategy, the addition of a Long Range Discrimination Radar (LRDR) to the BMDS would address this critical need by providing persistent 24 hours a day, 7 days a week, 365 days a year precision tracking and discrimination capability. The development, integration and fielding of the LRDR will provide an improved persistent midcourse BMDS discrimination capability in the Pacific architecture, optimize the Ground-Based Midcourse Defense (GMD) interceptor inventory, and address evolving threats. In addition the radar will provide larger hit assessment coverage potentially supporting improved warfighting capability to manage the Ground Based Interceptor (GBI) inventory and improving the capacity of the BMDS. MD40 Program-Wide Support (PWS) consists of essential non-headquarters management efforts providing integrated and efficient support to the MDA functions and activities across the entire Ballistic Missile Defense System (BMDS).												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Missile Defense Agency				Date: February 2015	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0604873C I Long Range Discrimination Radar (LRDR)			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	50.500	137.564	-	137.564
Total Adjustments	-	50.500	137.564	-	137.564
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	50.500			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-	-	137.564	-	137.564
Change Summary Explanation					
FY 2015 and 2016 changes reflect Public Law 113-235, FY2015 Omnibus; Consolidated and Further Continuing Appropriations Act which realigned funds to the Long Range Discrimination Radar (LRDR) Program Element 0604873C, Project MD96, from Ballistic Missile Defense Sensors Program Element 0603884C, Project MD96.					

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD96: Long Range Discrim Radar (LRDR)	-	-	50.500	131.514	-	131.514	147.031	140.005	125.825	73.471	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2015, funding was realigned to the Long Range Discrimination Radar (LRDR) Program Element 0604873C, Project MD96, from Ballistic Missile Defense Sensors Program Element 0603884C, Project MD96.

The FY 2016 increase reflects a ramp up for hardware and software design/development efforts, conducting the Preliminary Design Review and initiating procurement of long-lead items for the Long Range Discrimination Radar (LRDR).

A. Mission Description and Budget Item Justification

The BMD Vision Study, conducted by MDA with USSTRATCOM, identified the need to enhance the discrimination capabilities of our sensors and weapon systems. This need was affirmed by the USSTRATCOM's Integrated Air and Missile Defense Prioritized Capabilities List for Program Objective Memorandum FY15. The funds in this project will be utilized by the BMD Sensors Program to meet this need through the following activities:

- Development and deployment of a Long Range Discrimination Radar (LRDR) by FY 2020 to provide an improved persistent midcourse Ballistic Missile Defense System (BMDS) discrimination capability in the Pacific architecture and to increase the defensive capacity of the Ground-Based Midcourse Defense (GMD) interceptor inventory and address evolving threats.

- System engineering, software development, and testing support for LRDR development and deployment within the Pacific Sensor architecture.

- Modeling and Simulation (M&S) efforts to include: integration of LRDR digital simulations into the Ballistic Missile Defense System (BMDS), M&S architecture, and Verification, Validation, and Accreditation of LRDR models

- In addition, the inherent capabilities of the LRDR will be leveraged to support auxiliary missions, including augmentation of United States Air Force (USAF) Space Surveillance and Space Awareness capabilities

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2014	FY 2015	FY 2016
Title: Long Range Discrimination Radar (LRDR)	-	50.500	131.514
Articles:	-	-	-
Description: N/A			
FY 2014 Accomplishments: N/A			
FY 2015 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency							Date: February 2015				
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2014	FY 2015	FY 2016		
<div>-Complete Long Range Discrimination Radar engineering, environmental, installation, security, integration, availability, discrimination, and modeling & simulation requirements for integrating LRDR into the BMDS architecture.</div> <div>-Complete siting and environmental analyses, and final selection of location</div> <div>-Initiate civil engineering effort for installation planning</div> <div>-Complete development of Request for Proposal, release Request for Proposal, review proposals, evaluate candidates, and complete source selection</div> <div>FY 2016 Plans:</div> <div>-Increase due to anticipated contract award in FY 2015 and ramp up for hardware and software design/development efforts, conducting major program-level reviews and initiating procurement of long-lead items in FY 2016</div> <div>-Conduct System Requirements Review and perform requirements verification</div> <div>-Conduct radar Contract Integrated Baseline Review</div> <div>-Initiate development engineering for radar hardware, software and equipment shelter</div> <div>-Conduct system-level Preliminary Design Review</div> <div>-Conduct Developmental Baseline Review in first quarter FY 2016</div> <div>-Begin preparations for system-level Critical Design Review</div> <div>-Begin procurement of transmit/receive module components to include low noise amplifier, driver amplifier, power amplifier, multi-function controller chip, limiter and circulator</div> <div>-Qualify production line and initiate production of radar transmit/receive modules</div> <div>-Complete environmental, geotechnical, and other studies for environmental compliance and to inform military construction (MILCON) design effort</div>											
Accomplishments/Planned Programs Subtotals							-	50.500	131.514		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603179C: Advanced C4ISR	35.421	13.284	9.876	-	9.876	3.723	-	-	-	-	62.304
• 0603884C: SENSORS MILCON	33.504	-	-	-	-	116.821	109.112	59.194	-	-	318.631
• 0603896C: Ballistic Missile Defense Command and Control, Battle Management & Communication	390.207	428.277	450.085	-	450.085	461.759	423.843	442.926	460.112	Continuing	Continuing

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Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• 0603904C: Missile Defense Integration and Operations Center (MDIOC)	50.271	58.503	49.211	-	49.211	58.074	53.655	55.194	57.162	Continuing	Continuing
• 0603907C: Sea Based X-Band Radar (SBX)	70.336	64.409	72.866	-	72.866	71.267	75.760	72.319	87.058	Continuing	Continuing
• 31299903: MILCON PLANNING and DESIGN	10.891	58.704	-	-	-	8.161	8.323	8.450	8.745	-	103.274
Remarks											
D. Acquisition Strategy											
The Long Range Discrimination Radar (LRDR) acquisition strategy has been approved. MDA will follow robust acquisition practices to ensure delivery of a best value solution that maximizes mission performance and minimizes lifecycle costs. The Joint Requirements Oversight Council was briefed and concurred with LRDR requirements on 16 September 2014. A full and open competition will be conducted in order to award a single contract for the development, installation, and initial operations and sustainment of the radar system. The radar prime contract will contain both fixed-price and cost-reimbursable line items in order to properly balance acquisition costs and risks. Performance and cost incentives will be used to motivate contractor performance. The radar prime contractor will deliver a full technical data package, which will enable the government to effectively and affordably sustain the system. MDA will synchronize the radar development contract efforts with a simultaneous MILCON effort which will be executed through the US Army Corps of Engineers. The LRDR is expected to become operational no later than 2020.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD96 / Long Range Discrim Radar (LRDR)				

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Long Range Discrimination Radar (LRDR) - Prime Contractor	C/TBD	TBD : TBD	0.000	-		37.490	Sep 2015	127.946	Nov 2015	-		127.946	Continuing	Continuing	Continuing
Long Range Discrimination Radar (LRDR) - Site Activation & Studies	C/TBD	MDA : AL	0.000	-		13.010	Nov 2014	3.568	Nov 2015	-		3.568	Continuing	Continuing	Continuing
Subtotal			0.000	-		50.500		131.514		-		131.514	-	-	-

Remarks N/A															
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	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-	50.500	131.514	-	131.514	-	-	-

Remarks N/A									
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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency

Date: February 2015

Appropriation/Budget Activity
0400 / 4

R-1 Program Element (Number/Name)
PE 0604873C / Long Range Discrimination Radar (LRDR)

Project (Number/Name)
MD96 / Long Range Discrim Radar (LRDR)

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

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Long Range Discrimination Radar Capability					✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦				

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	Project (Number/Name) MD96 / <i>Long Range Discrim Radar (LRDR)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Long Range Discrimination Radar Capability	1	2015	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency										Date: February 2015		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
MD40: Program Wide Support	-	-	-	6.050	-	6.050	7.296	7.557	7.080	4.208	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Beginning in FY 2016, Program Wide Support was proportionately allocated to Long Range Discrimination Radar (LRDR)												
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 Services, and Federally Funded Research and Development Center (FFRDC) support. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation and, provides facility capabilities for MDA Executing Agent locations. Other MDA wide costs includes: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; 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. Program Wide Support is allocated on a pro-rata basis and therefore, fluctuates by year based on the total adjusted RDT&E profile (which excludes:0305103C Cyber Security Initiative, 0603274C Special Program, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2014	FY 2015	FY 2016	
Title: Program Wide Support Articles: Description: N/A FY 2014 Accomplishments: - FY 2014 Accomplishments were captured in multiple RDT&E Program Elements under MD40 Budget Project FY 2015 Plans: - FY 2015 Accomplishments are captured in multiple RDT&E Program Elements under MD40 Budget Project FY 2016 Plans: - Beginning in FY 2016, Program Wide Support was redistributed across RDT&E Program Elements with a proportional allocation to Long Range Discrimination Radar (LRDR) - See paragraph A: Mission Description and Budget Item Justification									-	-	6.050	
									-	-	-	
Accomplishments/Planned Programs Subtotals									-	-	6.050	

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Missile Defense Agency												Date: February 2015		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)				Project (Number/Name) MD40 / Program Wide Support				

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Wide Support - Agency Facilities and Maintenance SRM (MIPR)	MIPR	Various : Multi: AL, VA, Aust, Japan	0.000	-		-		6.050		-		6.050	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		6.050		-		6.050	-	-	-

Remarks N/A															
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			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		6.050		-		6.050	-	-	-

Remarks N/A															
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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Missile Defense Agency		Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / Long Range Discrimination Radar (LRDR)	Project (Number/Name) MD40 / Program Wide Support

Significant Event Complete	▲	Milestone Decision Complete	★	Element Test Complete	◆	System Level Test Complete	●	Complete Activity	✦
Significant Event Planned	△	Milestone Decision Planned	☆	Element Test Planned	◇	System Level Test Planned	○	Planned Activity	✧

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
MD40 Program-Wide Support																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Missile Defense Agency			Date: February 2015
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604873C / <i>Long Range Discrimination Radar (LRDR)</i>	Project (Number/Name) MD40 / <i>Program Wide Support</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2016	4	2020