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Missile Defense Agency (MDA) Exhibit R-2 RDT&E Budget Item Justification						Date May 2009		
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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603909C BMD Europ Midcourse Radar				

COST (\$ in Thousands)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Total PE Cost	0	76,537	0					
DX48 European Capability Block 4	0	73,261	0					
XX48 European Capability Sustainment	0	3,276	0					

European Midcourse Radar (EMR) upgrades began in FY08 in the Sensors PE 0603884C, Project DX11 - BMD radars Block 4.0. FY08 maintenance of the GBR-P (EMR) radar in a caretaker status is also in the Sensors PE, Project XX11 - BMD Radars Sustainment. For FY10 and out both efforts are contained in the European Capability PE 0603911C.

A. Mission Description and Budget Item Justification

The BMDS Block 4.0 mission is to defend allies and deployed forces in Europe from limited Iranian long-range threats, and expand protection of the United States. Locating a high-resolution X-band sensor like the European Midcourse Radar (EMR) in the European theater will provide tracking and discrimination coverage from Intercontinental Ballistic Missiles (ICBMs) in the midcourse phase of flight. The EMR will increase the BMDS probability of engagement success against ICBMs from Iran in defense of the United States and Europe.

A.1 System Element Description

EMR is a large, steerable, X-band phased array radar currently located at Kwajalein Missile Range, Kwajalein Atoll. EMR will be maintained in caretaker status (warm stand-by) at Kwajalein into FY10. The EMR back-end hardware (signal data processing equipment, etc.) will be upgraded and the entire radar deployed to a European location to provide BMDS midcourse discrimination capability.

The EMR requires a Ballistic Missile Defense System (BMDS) Communications System Complex (BCSC) that consolidates all of the communications systems: Satellite Communications (SATCOM), Defense Information Systems Network (DISN) core, campus communications (includes the Defense Systems Network (DSN), Secret Internet Protocol Router Network (SIPRNET), Non-Secure Internet Protocol Router Network (NIPRNET) to include Video Teleconferencing Internet Protocol (VTCoIP) capability, and unclassified telephone service), gateway, communications management, and wide area networks. This capability will provide the communications connectivity from the radar site to the BMDS Network. The EMR BCSC is a permanent facility.

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A.2 System Element Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS)

EMR will provide tracking and discrimination coverage for ICBMs in the midcourse phase of flight. This will increase the BMDS probability of engagement success. A permanent BCSC facility is required to provide the communications connectivity from the radar site to the BMDS Network.

A.3 Major System Element Goals

Complete European Midcourse Radar (EMR) upgrade and communications suite procurement in support of BMDS Block 4.0 goal to Defend Allies & Deployed Forces in Europe from Limited Iranian Long-Range Threats, Expand Protection of U.S.

A.4 Major Events Schedule and Description

Major Event	Project	Timeframe

B. Program Change Summary	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget (FY2009 PB)	0	0	0	
Current President's Budget (FY2010 PB)	0	76,537	0	
Total Adjustments	0	76,537	0	
Congressional Program Reductions	0	-263	0	
Congressional Rescissions	0	0	0	
Total Congressional Increases	0	76,800	0	
Total Reprogrammings	0	0	0	
SBIR/STTR Transfer	0	0	0	
Adjustments to Budget Years	0	0	0	

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar
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COST (\$ in Thousands)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
DX48 European Capability Block 4	0	73,261	0					
RDT&E Articles Qty	0	0	0					

Note: European Midcourse Radar (EMR) Upgrade began in FY08 under BMDS Radars PE 0630884C, Project DX11 BMD Radars Block 4.0. In FY10 and beyond, EMR is contained under the European Capability PE 0603911C, under Project DX48.

A. Mission Description and Budget Item Justification

BMDS Block 4.0 defends allies and deployed forces in Europe from limited Iranian long-range threats; and continues to expand protection in the U.S. Major efforts include an upgrade and deployment of the European Midcourse Radar (EMR) to Europe to provide sensor coverage of ballistic missiles in their mid-course phase of flight. The EMR requires a Ballistic Missile Defense System (BMDS) Communications System Complex (BCSC) that consolidates all of the communications systems.

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010	FY 2011
EMR Hardware & Software Upgrade	0	42,637	0	
RDT&E Articles (Quantity)	0	0	0	

The European Midcourse Radar (EMR) Upgrade is a large, steerable, X-band phased array radar currently located at Kwajalein Missile Range (KMR), Kwajalein Atoll. EMR is being maintained in caretaker status (warm stand-by) at Kwajalein through FY10. The EMR back-end hardware (signal and data processing equipment, etc.) will be upgraded and the radar will be deployed to a European location to provide the BMDS midcourse discrimination capability in defense of the United States and Europe.

FY08 Accomplishments:

- See Sensors PE 0603884C, Project DX11

FY09 Planned Program:

- Hardware (HW) upgrade design

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603909C BMD Europ Midcourse Radar		
<ul style="list-style-type: none"> • Common Software (SW) development • Acquisition of long lead material, and • Develop and implement detailed obsolescence risk reduction plans 				
	FY 2008	FY 2009	FY 2010	FY 2011
EMR Site Planning & Activation	0	15,168	0	
RDT&E Articles (Quantity)	0	0	0	
<p>European Midcourse Radar (EMR) Site design and Site Preparation efforts begin in FY09. Actual site construction is being funded with MILCON.</p> <p>FY08 Accomplishments:</p> <ul style="list-style-type: none"> • See Sensors PE 0603884C, Project DX11 <p>FY09 Planned Program:</p> <ul style="list-style-type: none"> • Site activation planning and site mobilization and preparation activities • Site design. Development and design of site activation facilities • Complete site selection activities 				

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APPROPRIATION/BUDGET ACTIVITY		R-1 NOMENCLATURE		
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)		0603909C BMD Europ Midcourse Radar		

	FY 2008	FY 2009	FY 2010	FY 2011
EMR Communications	0	15,456	0	0
RDT&E Articles (Quantity)	0	0	0	0

The Ballistic Missile Defense System (BMDS) Communications System Complex (BCSC) in support of the European Midcourse Radar (EMR) consolidates all of the communications systems in one facility: Satellite Communications (SATCOM), Defense Information Systems Network (DISN) core, campus communications (includes the Defense Systems Network (DSN), Secret Internet Protocol Router Network (SIPRNET), Non-Secure Internet Protocol Router Network (NIPRNET) to include Video Teleconferencing Internet Protocol (VTCoIP) capability, and unclassified telephone service), gateway, communications management, and wide area networks. This capability will provide the communications connectivity from the radar site to the BMDS Network.

FY08 Accomplishments:

- See Program Element 0603896C BMD C2BMC, Project DX01.

FY09 Planned Program:

- Engineering support to ensure the EMR BCSC integration into the overall BMDS
- Provide BMDS network and communications installation and support at the EMR
- Continue BCSC acquisition
- Continue acquisition of Modernization Enterprise Terminal (MET) SATCOM X/Ka-band capability
- Continue acquisition of Communications Power System
- Continue acquisition of Defense Red Switch Network (DRSN) equipment
- Initiate acquisition and leases of terrestrial communications capability (fiber optic cable, microwave, etc.) to support circuit requirements of the EMR

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE					
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603909C BMD Europ Midcourse Radar					

C. Other Program Funding Summary

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total Cost
PE 0603175C Ballistic Missile Defense Technology	106,437	119,308	109,760						-
PE 0603881C Ballistic Missile Defense Terminal Defense Segment	1,034,478	956,686	719,465						-
PE 0603882C Ballistic Missile Defense Midcourse Defense Segment	2,198,664	1,507,481	982,922						-
PE 0603883C Ballistic Missile Defense Boost Defense Segment	503,475	400,751	186,697						-
PE 0603884C Ballistic Missile Defense Sensors	574,231	777,693	636,856						-
PE 0603886C Ballistic Missile Defense System Interceptors	330,874	385,493	0						-
PE 0603888C Ballistic Missile Defense Test and Targets	619,137	919,956	966,752						-
PE 0603890C Ballistic Missile Defense Enabling Programs	416,937	402,778	369,145						-
PE 0603891C Special Programs – MDA	193,157	175,712	301,566						-
PE 0603892C Ballistic Missile Defense Aegis	1,126,337	1,113,655	1,690,758						-
PE 0603893C Space Tracking & Surveillance System	226,499	208,923	180,000						-
PE 0603894C Multiple Kill Vehicle	223,084	283,481	0						-
PE 0603895C BMD System Space Program	16,237	24,686	12,549						-
PE 0603896C BMD C2BMC	439,997	288,287	340,014						-
PE 0603897C BMD Hercules	51,387	55,764	48,186						-
PE 0603898C BMD Joint Warfighter Support	45,400	69,743	60,921						-
PE 0603904C Missile Defense Integration & Operations Center (MDIOC)	77,102	106,040	86,949						-
PE 0603906C Regarding Trench	1,945	2,968	6,164						-
PE 0603907C Sea Based X-Band Radar (SBX)	155,244	146,895	174,576						-
PE 0603908C BMD Europ Intercep Site	0	362,007	0						-
PE 0603911C BMD European Capability	0	0	50,504						-
PE 0603912C BMD European Comm Support	0	27,008	0						-
PE 0603913C Israeli Cooperative	0	0	119,634						-
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						-
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						-
PE 0901598C Management Headquarters – MDA	83,907	81,174	57,403						-

*Note:
The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.*

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Missile Defense Agency (MDA) Exhibit R-2A RDT&E Project Justification		Date May 2009
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar	
<p><u>D. Acquisition Strategy</u></p> <p>The EMR will continue to follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, development and evolutionary acquisition through the use of MDA's block structure and spiral development.</p>		

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis							Date May 2009			
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
EMR Hardware & Software Upgrade										
EMR upgrade	SS/CPAF	Raytheon/ MA	0	42,637	1/2Q	0	N/A			42,637
EMR Site Planning & Activation										
Site Activation , Facilities Design	MIPR	MDA-DFW / AL	0	15,168	1/4Q	0	N/A			15,168
EMR Communications										
EMR - BCSC	MIPR	PM DCATS / VA	0	4,413	1Q	0	N/A			4,413
EMR - SATCOM	MIPR	DISA / VA	0	2,356	1Q	0	N/A			2,356
EMR - Comms Power	MIPR	DISA / VA	0	2,454	1Q	0	N/A			2,454
EMR - Comms Support	MIPR	DISA / VA	0	196	1Q	0	N/A			196
EMR - Terrestrial Fiber Optic Cable	MIPR	DISA / USAFE / VA	0	188	1Q	0	N/A			188
EMR - Comms Engineering Support	SS/CPAF	Lockheed Martin Team/ VA	0	5,849	1Q	0	N/A			5,849
Subtotal Product Development			0	73,261		0				73,261
Remarks										

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Missile Defense Agency (MDA) Exhibit R-3 RDT&E Project Cost Analysis	Date May 2009
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar
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II. Support Costs Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Support Costs										

Remarks

III. Test and Evaluation Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										

Remarks

IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			0	73,261		0				73,261
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Remarks

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail						Date May 2009		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar				
Schedule Profile	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Development Milestones								
Begin EMR Hardware Design/Long Lead Procurement		1Q						
EMR Site Design 35% Complete		2Q						
EMR Site Design 60% Complete		4Q						
Begin EMR Site Preparation		4Q						

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APPROPRIATION/BUDGET ACTIVITY				R-1 NOMENCLATURE				
RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)				0603909C BMD Europ Midcourse Radar				

COST (\$ in Thousands)	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
XX48 European Capability Sustainment	0	3,276	0					
RDT&E Articles Qty	0	0	0					

Note: FY08 EMR caretaker maintenance is in the Sensors PE 06030884C, Project XX11. For FY10 and out this effort is in the European Capability (EC) PE, under the same Project XX48.

A. Mission Description and Budget Item Justification

Maintains the GBR-P radar at Kwajalein in a caretaker status until it is disassembled and upgraded to the European Midcourse Radar (EMR).

B. Accomplishments/Planned Program

	FY 2008	FY 2009	FY 2010	FY 2011
European Midcourse Radar (EMR) Sustainment	0	3,276	0	
RDT&E Articles (Quantity)	0	0	0	

Maintain the GBR-P radar at Kwajalein in a caretaker status until it is disassembled and upgraded to the European Midcourse Radar (EMR) configuration.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar
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C. Other Program Funding Summary

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PE 0603908C BMD Europ Intercep Site	0	362,007	0						-
PE 0603911C BMD European Capability	0	0	50,504						-
PE 0603912C BMD European Comm Support	0	27,008	0						-
PE 0603913C Israeli Cooperative	0	0	119,634						-
PE 0605502C Small Business Innovative Research BMDO	137,409	0	0						-
PE 0901585C Pentagon Reservation	5,971	19,667	19,709						-
PE 0901598C Management Headquarters – MDA	83,907	81,174	57,403						-

Note: The Ballistic Missile Defense System (BMDS) is an integrated, interoperable, global defense system. The programs which comprise the BMDS are interdependent.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar	
<p><u>D. Acquisition Strategy</u></p> <p>The EMR will continue to follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, development and evolutionary acquisition through the use of MDA's new block structure and spiral development.</p>		

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail								Date May 2009		
APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)					R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar					
I. Product Development Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
European Midcourse Radar (EMR) Sustainment										
GBR-P (EMR) Caretaker support	SS/CPAF	Raytheon/ MA	0	3,276	1/4Q	0	N/A			3,276
Subtotal Product Development			0	3,276		0				3,276
Remarks										
II. Support Costs Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Support Costs										
Remarks										
III. Test and Evaluation Cost (\$ in Thousands)										
Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Test and Evaluation										
Remarks										

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Missile Defense Agency (MDA) Exhibit R-4A Schedule Detail	Date May 2009
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APPROPRIATION/BUDGET ACTIVITY RDT&E, DW/04 Advanced Component Development and Prototypes (ACD&P)	R-1 NOMENCLATURE 0603909C BMD Europ Midcourse Radar
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IV. Management Services Cost (\$ in Thousands)

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2009 Cost	FY 2009 Award/ Oblg Date	FY 2010 Cost	FY 2010 Award/ Oblg Date	FY 2011 Cost	FY 2011 Award/ Oblg Date	Total Cost
Subtotal Management Services										

Remarks

Project Total Cost			0	3,276		0				3,276
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Remarks