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**Department of Defense
Fiscal Year (FY) 2011 President's Budget**

February 2010



Missile Defense Agency

Justification Book Volume 2a

Research, Development, Test & Evaluation, Defense-Wide - 0400

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Introduction & Explanation of Contents

The Department of Defense FY2011 President's Budget RDT&E, Defense-wide Volume 2, Missile Defense Agency (MDA) justification materials consists of three books titled, Volume 2a, 2b, and 2c. Apart from the Table of Contents and list of Acronyms provided in each book, justification documents are provided in the book listed below.

Volume 2a

- R-1 Comptroller Exhibit
- RDTE&E Exhibits in BA-03 (PEs: 0603175C, 0603901C)
- RDTE&E Exhibits in BA-04 (PEs: 0603881C, 0603882C, 0603883C, 0603884C, 0603886C, 0603888C, 0603890C)

Volume 2b

- R-1 Comptroller Exhibit
- RDT&E Exhibits in BA-04 continued (PEs: 06033892C, 0603893C, 0603894C, 0603895C, 0603896C, 0603897C, 0603898C, 0603904C, 0603907C, 0603908C, 063909C, 0603911C, 0603912C, 0603913C, 0604880C, 0604881C, 0604883C, 0604484C)
- RDT&E Exhibits in BA-06 (PEs: 0605502C, 0901585C, 0901598C)

Volume 2c

- MDA Appropriation Summary
- MDA FY 2011 Budget Estimate Overview
- MDA – Procurement Exhibits (includes P-1 Comptroller Exhibit)
- Congressional Reporting Requirements
- Program Assessment Rating Tool (PART) Submission

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Program Elements Not Providing R Exhibits Due to Classification

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)

Line Item	Budget Activity	Program Element Number	Program Element title
83	04	0603891C	Special Programs – MDA
92	04	0603906C	Regarding Trench

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Missile Defense Agency
 FY 2011 President's Budget
 Exhibit R-1
 (Dollars in Thousands)

Appropriation: 0400D Research, Development, Test & Eval, DW

Date: 20 Jan 2010

Line No	Program Element Number	Item	Act	FY 2009	FY 2010	FY 2011	Se c
28	0603175C	Ballistic Missile Defense Technology	03	117,602	189,229	132,220	U
64	0603901C	Directed Energy Research	03			98,688	U
		Advanced Technology Development (ATD)		117,602	189,229	230,908	
75	0603881C	Ballistic Missile Defense Terminal Defense Segment	04	951,414	715,732	436,482	U
76	0603882C	Ballistic Missile Defense Midcourse Defense Segment	04	1,472,683	1,027,371	1,346,181	U
77	0603883C	Ballistic Missile Defense Boost Defense Segment	04	384,365	182,317		U
79	0603884C	Ballistic Missile Defense Sensors	04	682,754	621,017	454,859	U
80	0603886C	Ballistic Missile Defense System Interceptor	04	308,869			U
81	0603888C	Ballistic Missile Defense Test & Targets	04	906,952	823,333	1,113,425	U
82	0603890C	BMD Enabling Programs	04	402,776	358,751	402,769	U
83	0603891C	Special Programs - MDA	04	182,998	250,185	270,189	U
84	0603892C	AEGIS BMD	04	1,054,323	1,435,717	1,467,278	U
85	0603893C	Space Tracking & Surveillance System	04	209,831	161,609	112,678	U
86	0603894C	Multiple Kill Vehicle	04	226,027			U
87	0603895C	Ballistic Missile Defense System Space Programs	04	23,250	12,492	10,942	U
88	0603896C	Ballistic Missile Defense Command and Control, Battle Management and Communicati	04	275,174	334,734	342,625	U
89	0603897C	Ballistic Missile Defense Hercules	04	51,629	47,932		U
90	0603898C	Ballistic Missile Defense Joint Warfighter Support	04	66,283	61,098	68,726	U
91	0603904C	Missile Defense Integration & Operations Center (MDIOC)	04	102,823	86,483	86,198	U
92	0603906C	Regarding Trench	04	3,159	6,130	7,529	U
93	0603907C	Sea Based X-Band Radar (SBX)	04	143,878	167,153	153,056	U

Exhibit R-1: Total (Direct and Supplementals), as of January 20, 2010 at 11:18:22

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Missile Defense Agency
 FY 2011 President's Budget
 Exhibit R-1
 (Dollars in Thousands)

Appropriation: 0400D Research, Development, Test & Eval, DW

Date: 20 Jan 2010

Line No	Program Element Number	Item	Act	FY 2009	FY 2010	FY 2011	Sec
94	0603908C	BMD European Interceptor Site	04	348,722			U
95	0603909C	BMD European Midcourse Radar	04	73,728			U
96	0603911C	BMD European Capability	04		50,226		U
97	0603912C	BMD European Communications Support	04	26,016			U
98	0603913C	Israeli Cooperative Programs	04		201,323	121,735	U
107	0604880C	Land-Based SM-3 (LBSM3)	04			281,378	U
108	0604881C	AEGIS SM-3 Block IIA Co-Development	04		255,987	318,800	U
109	0604883C	Precision Tracking Space System RDT&E	04			66,969	U
110	0604884C	Airborne Infrared (ABIR)	04			111,671	U
	Advanced Component Development & Prototypes			7,897,654	6,799,590	7,173,490	
151	0605502C	Small Business Innovative Research - MDA	06	124,788			U
175	0901585C	Pentagon Reservation	06	20,146	19,709	20,482	U
176	0901598C	Management HQ - MDA	06	87,151	52,403	29,754	U
	RDT&E Management Support			232,085	72,112	50,236	
Total Missile Defense Agency				8,247,341	7,060,931	7,454,634	

Exhibit R-1: Total (Direct and Supplementals), as of January 20, 2010 at 11:18:22

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64	03	0603901C	DIRECTED ENERGY RESEARCH.....	Volume 2a - 43

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)

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76	04	0603882C	Ballistic Missile Defense Mid-Course Segment.....	Volume 2a - 207
77	04	0603883C	Ballistic Missile Defense Boost Defense Segment.....	Volume 2a - 311
79	04	0603884C	Ballistic Missile Defense Sensors.....	Volume 2a - 341
80	04	0603886C	Ballistic Missile Defense System Interceptor.....	Volume 2a - 483
81	04	0603888C	Ballistic Missile Defense Test and Targets.....	Volume 2a - 505
82	04	0603890C	Ballistic Missile Defense Enabling Programs.....	Volume 2a - 805
84	04	0603892C	BMD AEGIS.....	Volume 2b - 1

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Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
85	04	0603893C	SPACE TRACKING & SURVEILLANCE SYSTEM.....	Volume 2b - 173
86	04	0603894C	MULTIPLE KILL VEHICLE.....	Volume 2b - 225
87	04	0603895C	BMD SYSTEM SPACE PROGRAM.....	Volume 2b - 249
88	04	0603896C	BMD C2BMC.....	Volume 2b - 305
89	04	0603897C	BMD HERCULES.....	Volume 2b - 391
90	04	0603898C	BMD JOINT WARFIGHTER SUPPORT.....	Volume 2b - 413
91	04	0603904C	MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC).....	Volume 2b - 503
93	04	0603907C	SEA BASED X-BAND RADAR (SBX).....	Volume 2b - 623
94	04	0603908C	BMD EUROPEAN INTERCEPTOR SITE.....	Volume 2b - 657
95	04	0603909C	BMD EUROPEAN MIDCOURSE RADAR.....	Volume 2b - 675
96	04	0603911C	BMD EUROPEAN CAPABILITY.....	Volume 2b - 697
97	04	0603912C	BMD European Comm Support.....	Volume 2b - 709
98	04	0603913C	ISRAELI COOPERATIVE.....	Volume 2b - 719
107	04	0604880C	LAND-BASED SM-3.....	Volume 2b - 781
108	04	0604881C	Aegis SM-3 BLOCK IIA CO-DEVELOPMENT.....	Volume 2b - 795
109	04	0604883C	PRECISION TRACKING SPACE SYSTEM.....	Volume 2b - 815
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Budget Activity 06: RDT&E Management Support

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
151	06	0605502C	Small Business Innovative Research BMDO.....	Volume 2b - 851
175	06	0901585C	Pentagon Reservation.....	Volume 2b - 859
176	06	0901598C	Management Headquarters-MDA.....	Volume 2b - 869

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Ballistic Missile Defense Boost Defense Segment	0603883C	77	04.....Volume 2a -	311
Ballistic Missile Defense Enabling Programs	0603890C	82	04.....Volume 2a -	805
Ballistic Missile Defense Mid-Course Segment	0603882C	76	04.....Volume 2a -	207
Ballistic Missile Defense Sensors	0603884C	79	04.....Volume 2a -	341
Ballistic Missile Defense System Interceptor	0603886C	80	04.....Volume 2a -	483
Ballistic Missile Defense Technology	0603175C	28	03.....Volume 2a -	1
Ballistic Missile Defense Terminal Defense Segment	0603881C	75	04.....Volume 2a -	55
Ballistic Missile Defense Test and Targets	0603888C	81	04.....Volume 2a -	505
BMD AEGIS	0603892C	84	04.....Volume 2b -	1
BMD C2BMC	0603896C	88	04.....Volume 2b -	305
BMD EUROPEAN CAPABILITY	0603911C	96	04.....Volume 2b -	697
BMD European Comm Support	0603912C	97	04.....Volume 2b -	709
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BMD SYSTEM SPACE PROGRAM	0603895C	87	04.....	Volume 2b - 249
DIRECTED ENERGY RESEARCH	0603901C	64	03.....	Volume 2a - 43
ISRAELI COOPERATIVE	0603913C	98	04.....	Volume 2b - 719
LAND-BASED SM-3	0604880C	107	04.....	Volume 2b - 781
Management Headquarters-MDA	0901598C	176	06.....	Volume 2b - 869
MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)	0603904C	91	04.....	Volume 2b - 503
MULTIPLE KILL VEHICLE	0603894C	86	04.....	Volume 2b - 225
Pentagon Reservation	0901585C	175	06.....	Volume 2b - 859
PRECISION TRACKING SPACE SYSTEM	0604883C	109	04.....	Volume 2b - 815
SEA BASED X-BAND RADAR (SBX)	0603907C	93	04.....	Volume 2b - 623
Small Business Innovative Research BMDO	0605502C	151	06.....	Volume 2b - 851
SPACE TRACKING & SURVEILLANCE SYSTEM	0603893C	85	04.....	Volume 2b - 173

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**Missile Defense Agency
Fiscal Year (FY) 2011 Budget Estimates**

ACRONYMS AND ABBREVIATIONS

A	
A&AS	Advisory and Assistance Services
AADC	Area Air Defense Commander
AIRU	Advanced Inertial Reference Unit
AAMDC	Army Air Missile Defense Command
ABIR	Airborne Infrared Radar
ABL	Airborne Laser
ABS	American Bureau of Shipping
ACCS	Air Command and Control System
ACS	Attitude Control System, Auxillary Communication Shelter
ACD	Adversary Capability Document
ACD&P	Component Development and Prototypes
ACL	Achievable Capabilities List
ADAC	Applied Data Analysis Center
ADP	Arrow Deployability Program; Automated Data Processing; Adversary Delta Package
AEP	Analysis Execution Plans
AFB	Air Force Base
AFC2ISRC	Air Force Command and Control Intelligence Surveillance Reconnaissance Center
AFS	Avionics Flight Software
AFSCN	Air Force Satellite Control Network
AIRS	Airborne Infrared Surveillance
AIS	Automated Information System
AKV	Agile Kill Vehicle
ALTBMD	Active Layered Theater Ballistic Missile Defense
ALHTK	Air Launch Hit to Kill
AMOR	Army Missile Optical Range, Redstone Arsenal, AL
AMPP	Arrow Missile Production Program
AN/TPY	Army Navy/Transportable Radar Surveillance
AoA	Analysis of Alternatives
AOC	Air Operations Center
AOP	Airborne Optics Platform; Advanced Optical Processor
AOR	Area of Responsibility
APL	Applied Physics Laboratory
ARAV	Aegis Readiness Assessment Vehicles
ARO	All Reflective Optics
ARS	Active Ranging System
ASIP	Arrow System Improvement Program; Application Specific Integrated Circuit
ASP	Advanced Signal Processor
AST	Airborne Surveillance Test Bed; Arrow System Test
ATH	Above the Horizon
ATIC	Advanced Technology Innovation Cell
ATILL	Advanced Tracking Illuminator Laser
AT&L	Acquisition, Technology and Logistics
ATO	Authority To Operate
ATT	Algorithm-to-Test Reviews
AVIT	Air Vehicle Integration and Test
AWS	Arrow Weapon System; AEGIS Weapon System

ACRONYMS AND ABBREVIATIONS

B	
BAA	Broad Agency Announcement
BCA	Business Case Analysis; BMDS Capability Assessment
BCER	BMDS Combined Element Reviews
BC/FC	Beam Control/Fire Control
BCSC-T	BMDS Communication System Complex Transportable
BITC	Battle Management Integration Center
BLOS	Beyond Line-of-Sight
BM	Battle Management; Ballistic Missile
BM/C3	Battle Management, Command, Control, and Communications
BM/C4I	Battle Management, Command, Control, Communications, Computers, and Intelligence
BMD	Ballistic Missile Defense
BMDS	Ballistic Missile Defense System
BMDSM	BMD System Manager
BNOSC	BMDS Network Operations and Security Center
BOA	BMDS Overhead Non-imaging Infrared (ONIR) Architecture
BOIP	Basis of Issue Plan
BPRRA	Baseline Production Readiness Risk Assessments
BQT	Block Qualification Testing
BRAC	Base Realignment and Closure
BSC	Battery Support Center
BSO	BMDS Safety Officers
BSOC	BMDS System Operability Check
BSP	BMD Signal Processor
BTH	Below the Horizon
BTEC	BMDS Training and Education Center
BVT	Booster Verification Test
BWO	BMDS Watch Officers
C	
C2BMC	Command and Control, Battle Management, and Communications
CAIG	Cost Analysis Improvement Group
CAPS	Commanders Analysis and Planning System
CaT	Characterization and Transition Reviews
CCC	C2BMC Control Center
CCAR	Comprehensive Cost and Requirement System
CCM	Counter Counter-Measures
CCMWG	Common Cost Methodology Working Group
CCWG	Corporate Clutter Working Group
CD	Concept Descriptions; Cobra Dane
CDA	Core Depot Assessment; Coherent Distribution Aperture
CDR	Critical Design Review
CDU	Cobra Dane Upgrade
CE	Capability Enhanced
CEM	Carrier Electronics Module
CI	Counterintelligence
CIFC	Cyber Intelligence Fusion Cell
CLE	Command and Launch Equipment
CLS	Contractor Logistics Support
CMART	Consolidated Missile Asset Reused for Targets
CMOC	Cheyenne Mountain Operations Center

ACRONYMS AND ABBREVIATIONS

CNE	Communications Node Equipment
CNIP	C2BMC Network Interface Processor
COCOM	Combatant Commander
COCOM C2	Combatant Command-Command and Control
COIL	Chemical Oxygen-Iodine Laser
COLD	Center for Optical Logic Devices
CONOPS	Concept of Operations
CONUS	Continental United States
COOP	Calibrated Orbiting Objects Program (COOP)
COTS	Commercial Off-The-Shelf
CPAF	Cost Plus Award Fee
CPI	Continuing Process Improvement
CPIF	Cost-Plus-Incentive-Fee
CR	Capability Release
CRA	Continuing Resolution Authority
CSS	Contractor Support Services
CTEIP	Central Test and Evaluation Investment Program
CTF	Controlled Test Flight; Combined Test Force
CTTO	Concurrent Test, Training and Operations
CTV	Control Test Vehicle
CY	Calendar Year
D	
DACS	Divert and Attitude Control System
DA	Distributed Aperture
DAA	Defense Appropriations Act
DACS	Divert and Attitude Control System
DAD	Discrimination Augmentation Devices
DAG	Director's Action Group
DARPA	Defense Advanced Research Projects Agency
DCMA	Defense Contract Management Agency
DDG	Guided Missile Destroyer
DFAS	Defense Finance and Accounting Service
DFE	Discrimination Fusion Engine
DGSE	Deployable Ground Support Equipment
DGT	Distributed Ground Test
DIACAP	DoD Information Assurance Certification and Accreditation Process
DiD	Defense-in-Depth
DIICOE	Defense Information Infrastructure Common Operating Environment
DISA	Defense Information Systems Agency
DISN	Defense Information Systems Network
DMETS	Distributed, Multi-Echelon Training System
DMTP	Development Master Test Plan
DoD	Department of Defense
DOORS	Dynamic Object Oriented Requirement Systems
DOT&E	Director, Operational Test and Evaluation
DOTMLPF	Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities
DREN	Defense Research Engineering Network
DROIC	Demonstrated Digital Readout Integrated Circuits
DRSN	Defense Red Switch Network
DSE	Distributed Sensing Experiment
DSWS	David's Sling Weapon System

ACRONYMS AND ABBREVIATIONS

DT/OT	Development Test/Operational Test
DTRMC	Defense Test Resource Management Center
DVT	Development Verification Test
E	
E-LRALT	Enhanced Long Range Air Launch Target
E&M	Evaluation and Maturation
EA	Executing Agent
EADSIM	Extended Air Defense Simulation
EAP	Emergence Activation Plan
EBCCD	Electron Bombarded Charge Couple Device
ECI	European Communications Interface
ECCA	Element/Component Characterization for Analysis
ECS	Element Capability Specification
EDM	Engineering Development Model
EE	Engineering Evaluation
EEI	Essential Elements of Information
EHF	Extremely High Frequency
EICO	Element Integration and Checkout
EIS	European Interceptor Site
EKV	Exoatmospheric Kill Vehicle
ELDT	Early Launch Detection and Tracking
ELO	Epitaxial Layer Overgrowth
EMDR	Executive Mission Data Review
EMR	European Midcourse Radar
EMRL	Engineering and Manufacturing Readiness Level
EO	Electro-optical
EO/IR	Electro-Optical/Infrared
EoR	Engage on Remote
EQLB	Executive Quick Look Briefing
ESG	Engagement Sequence Group
ESI	External System Interface; Enterprise Software Initiative
ESL	External Sensors Lab
ETE	Element Test and Evaluation
ET	Embedded Test
EUCOM	European Command
EW SPT	Early Warning Special Product Team
EWR	Early Warning Radar
EWS	Enterprise Work Stations
F	
FAC	First Alert and Cueing
FATC	Feature Aided Track Correlation
FBS	Forward Based Sensor
FBX-T	Forward Based Radar - Transportable
FDE	Force Developers Evaluation
FFP	Firm Fixed Price
FFRDC	Federally Funded Research and Development Center
FIS	Facility Installation Standards
FISMA	Federal Information Security Management Act
FISS	Foreign Intelligence and Security Services

ACRONYMS AND ABBREVIATIONS

FPA	Focal Plane Array
FMA	Foreign Material Acquisition; Foreign Military Asset
FMS	Foreign Military Sales
FPI	Fixed Price Incentive
FS&E	Facilities, Siting & Environment
FT	Flight Test
FTF	Flexibility Target Family
FTG	Flight Test GMD
FTM	Flight Test Mission
FTR	Flight Test Round
FTSBT	Far-Term Sea Based Terminal
FY	Fiscal Year
FUF	Fire Unit Fielding
FYDP	Future Years Defense Program
G	
GAO	Government Accountability Office
GBI	Ground Based Interceptor
GBR-P	Ground Based Radar Prototype
GCC	Geographic Combatant Commanders
GCCS-J	Global Command and Control System - Joint
GCN	Global Command Network; GMD Communications Network
GEM	Global Engagement Manager; Guidance Enhancement Missiles (PATRIOT)
GFC / C	GMD Fire Control and Communications
GFE	Government Furnished Equipment
GGT	Government Ground Test
GIFC	Global Integrated Fire Control
GM	Ground-based Midcourse
GMD	Ground-based Midcourse Defense
GMAP	Government MDA Assurance Provisions
GNCC	Global Network Operations Center
GN&C	Guidance Navigation and Control
GS	Ground Systems
GTD	Ground Test Distributed
GTI	Ground Test Integrated
GTV	Guidance Test Vehicle
H	
HAA	High Altitude Airship
HACNE	High Availability Comm Node Equipment
HAENS	High Altitude Exoatmospheric Nuclear Survivability
HALO	High Altitude Observatory
HARD	Hardening
HBCN	High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communication Node
HBCU/MI	Historically Black Colleges and Universities/Minority Institutions
HC	Hazardous Classification
HEL	High Energy Laser
HEMP	High Altitude Electromagnetic Pulse
HIL	Human-in-the-Loop; Hardware-in-the-Loop
HITL	Hardware-in-the-Loop
HMI	Human-Machine Interface

ACRONYMS AND ABBREVIATIONS

HPSI	High Power System Integration
HF	High Frequency
HTI	Hyper temporal Infrared Sensor
HTK	Hit to Kill
HWIL	Hardware-in-the-Loop
HMMWV	High Mobility Multipurpose Wheeled Vehicle
I	
IA	Information Assurance
IADP	Integrated Analysis Data Package
IAI	Israel Aircraft Industries
IAM	Information Assurance Manager
IAMD	Integrated Air and Missile Defense
IAR	Integrated Assessment Review
IAT	Independent Assessment Teams
IBMP	Integrated Ballistic Missile Picture
IBR	Initial Baseline Review
ICAs	Industrial Capability Assessments
ICAR	Interim Capability Assessment Report
ICBM	Intercontinental Ballistic Missile
ICD	Interface Control Document
ICOFT	Institutional Conduct of Fire Trainer
ICSS	Interim Contractor Support System
IDAP	Integrated Data Analysis Plans
IDD	Interface Design Documentation
IDF	Israel's Defense Forces
ID/IQ	Indefinite Delivery/Indefinite Quantity
IDO	Initial Defensive Operations
IDMP	Integrated Data Management Plans
IDT	In-Flight Interceptor Communications System Data Terminal
IET	Integration Event Matrix
IETM	Integrated Electronic Technical Manual
IFT	Integrated Flight Test
IFICS	In-Flight Interceptor Communications System
IGT	Integrated Ground Test
IM	Insensitive Munitions
IM/FHC	Insensitive Munitions / Final Hazard Classification
IM/IT	Information Management/Information Technology
IMDO	Israeli Missile Defense Organization
IMoD	Israeli Ministry of Defense
IMP	Integrated Master Plan
iPOP	International Point of Presence
IMTP	Integrated Master Test Plan
IMU	Inertial Measurement Unit
IP	Integration Phase
IPT	Integrated Product Team
IR	Infrared
IRAD	Institution Research and Application Development
IRBM	Intermediate Range Ballistic Missile
IRFNA	Inhibited Red Fuming Nitric Acid
IRST	Infrared Search and Track
IRT	Independent Review Team

ACRONYMS AND ABBREVIATIONS

ISA&I	Israeli System Architecture and Integration
ISC	Intelligence Support Cell (MDA)
ISCD	Integrated System Configuration Database
ISG	Integration Synchronization Group
ISPAN	Integrated Strategic Planning and Analysis Network
ISSE	Information System Security Engineering
ISTC	Integrated System Test Capability
IRREL	Infrared Radiation Effects Laboratory
ISTS	Integrated Simulation and Tactical Software
IT	Integrated Test; Information Technology
ITB	Israeli Test Bed
ITOP	International Test Operation Procedures
ITP	Interceptor Technology Program
ITW/AA	Initial Threat Warning/Attack Assessment
J	
JADE	Joint Analysis Data Engine
JAT	Joint Analysis Teams
JABMD	Japan BMD
JCIDS	Joint Capabilities Integration and Development System
JCTV	Joint Control Test Vehicle
JCB	Joint Capability Board
JDA	Japan Defense Agency
JDAC	Joint Data Analysis Center
JIAMD	Joint Integrated Air and Missile Defense
JEDA	Joint Engine for Defense Analysis
JEWL	Joint Early Warning Laboratory
JFCC-IMD	Joint Functional Component Command - Integrated Missile Defense
JHU	John Hopkins University
JILSMT	Joint ILS Management Team
JNIC	Joint National Integration Center, Schriever AFB, CO
JRD	Joint National Integration Center Research and Development
JRE	Joint Range Extension
JROC	Joint Requirements Oversight Council
JTAG	Joint Test Action Group
JTAMDO	Joint Theater Air and Missile Defense Organization
JTF-GNO	Joint Task Force-Global Network Operations
JTIDS	Joint Tactical Information Data System
JTOC	JNIC Target Operations Center
JWICS	Joint Worldwide Intelligence Communications System
JWSP	Joint Warfighter Support Program
K	
KE	Kinetic Energy
KEI	Kinetic Energy Interceptor
KKV	Kinetic Kill Vehicle
KLC	Kodiak Launch Complex
KMR	Kwajalein Missile Range
KMRSS	Kwajalein Mobile Range Safety System
KPP	Knowledge Point
KTF	Kauai Test Facility

ACRONYMS AND ABBREVIATIONS

KM	Kilometers
KV	Kill Vehicle
L	
LADAR	Laser Detection and Ranging; Laser Radar
LAN	Local Area Network
LCT	Laser Communications Terminal
LDACS	Liquid Divert and Attitude Control System
LDC	Limited Defensive Capabiltiy
LEO	Low Earth Orbit
LORA	Level of Repair Analysis
LOT	Launch on TADIL
LFT&E	Live Fire Test and Evaluation
LMSSC	Lockheed Martin Space Systems Company
LPSI	Low Pressure Safety Injection
LRALT	Long Range Air Launched Target
LRBM	Long Range Ballistic Missile
LRS&T	Long Range Surveillance and Tracking
LSE	Launch Support Equipment
LTP	Laser Technology Program
LTPO	Lower Tier Program Office
LUT	Limited User Testing
LWIR	Long Wave Infrared
M	
M&S	Modeling and Simulation; Materials and Structure
MAP	MDA Assurance Plan
MARC	MDA Assurance Representative
MARTI	Missile Alternative Range Target Instrument
MASINT	Measures and Signals Intelligence
MCS	Management Control System
MCCF	Mission Control Center Facility
MD	Missile Defense
MDA	Missile Defense Agency
MDDC	Missile Defense Data Center
MDE	Missile Defense Element
MDEB	Missile Defense Executive Board
MDIOC	Missile Defense Integrated Operations Center
MDR	Mission Data Review
MDSE	Missile Defense System Exerciser
MDSEC	Missile Defence Space Experimentation Center
MEB	Missile Equipment Building; Mechanical Electrical Building
MEIT	Multi-Element Integration Testing
MER	Manpower Estimate Report
MET	Modernization Enterprise Terminal
M-FASP	Midcourse Fly Along Sensor Package
MHC/BLEA-GV	Multi-hypothesis correlation/BMDS Launch Event Association-Global Vision
MILCON	Military Construction
MILSATCOM	Military Satellite Communiattions
MIL-STD	Military Standards
MIMO	Multiple-Input Multiple-Output

ACRONYMS AND ABBREVIATIONS

MIP	Master Integration Plan
MIPS	Missile Defense Planning System
MIPR	Military Interdepartmental Purchase Request
MIS	MDSEC Interchange System
MIT	Miniature Interceptor Technology; Massachusetts Institute of Technology
MIT/LL	Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, MA
MKV	Multiple Kill Vehicle
MLP	Mobile Launch Platform
MMIC	Multi-Mission Integration Cell; Microwave Monolithic Integrated Circuits
MOA	Memorandum of Agreement
MOC	Missile Defense Agency Operations Center
MOST	Multiple Target Tracking Optical Sensor Array Technology
MOU	Memorandum of Understanding
MPAT	Producibility and Manufacturing Technology
MR	Modificaiton Request
MRBM	Medium Range Ballistic Missile
MRL	Multiple Rocket Launcher; Mission Requirements Letter
MRP	Missile Round Pallet
MRSS	Mobile Range Safety System
MRT	Medium Range Target
MRTF	Missions Readiness Task Force
MSCI	Missile Space Intelligence Center
MSK	Mechanical Steering Kit
MSTAR	Missile Defense Science, Technology & Research
MTEPP	Master Test and Evaluation Program Plan
MTSC	Micro Satellite Target System
MUA	Military Utility Assessment
N	
NASIC	National Air and Space Intelligence Center
NATO	North Atlantic Treaty Organization
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center
NCA	National Command Authority
NCADe	Net Centric Airborne Defense Element
NCES	Net-Centric Enterprise Services
NCR	National Capital Region
NECC	National Enabled Command Capability
NECS	Network Enterprise Centric Services
NFIRE	Near Field Infrared Experiment
NFR	Near Field Range
NGST	Northrop Grumman Space Technology
NORAD	North American Aerospace Defense Command
NORTHCOM	Northern Command
NIPRNET	Non-Secure Internet Protocol Router Network
NMCC	National Military Command Center
NMT	Navy Multi Band Terminal
NRL	Naval Research Laboratory, Washington, DC
NTD	Near-Term Discrimination
N-UCAS	Navy-Unmanned Combat Aerial System

ACRONYMS AND ABBREVIATIONS

NSWC-Corona	Naval Surface Warfare Center Corona
NT-ECCM	Near Term-Electronic Counter Counter-Measure
O	
O&M	Operations and Maintenance
OBV	Objective Boost Vehicle
ODA	Optical Data Analysis
ODI	Offensive/defensive Intergration
OEM	Original Equipment Manufacturers
OGA	Other Government Agency
OIS	Orbital Insertion Stage
OI&S	Operational Integration and Support
OPIR	Overhead Persistent Infrared
OPLAN	Operations Plan
OPSCAP	Operations Capabilities
OSC	Operations Support Center
OSS	Off-Shore Support
OTA	Operational Test Agency
OTHR	Over The Horizon Radar
OVA	Operational Viability Assessment
P	
PA	Project Arrangement
PAA	Phased Adaptive Approach
PAM	Planning Allocation Matrix
PACOM	U.S. Pacific Command
PAC-3	Patriot Advanced Capability-3
PB	President's Budget
PBL	Performance Based Logistics
PCB	Program Change Board
PCL	Prioritized Capability List
PCCS	Protected Communication Control System
PCIL	Prime Consolidated Integration Laboratory
PCR	Preliminary Capabilty Review
PDM	Program Decision Memorandum
PDR	Preliminary Design Review
PE	Program Element
PFR	Post Flight Reconstruction
PMAP	Process Mission Assurance Plan
PMRF	Pacific Missile Range Facility, Barking Sands, Kauai, HI
PMT	Pre-Mission Test
POAP	Photoconduction On Active Pixels
PPU	Prime Power Unit
PROCAP	Protection Capability
PRST	Pacific Range Support Team
PSN	Parallel Staging Area
PTE	Plant Estimates
PTSS	Precision Space Tracking System
PTV	Propulsion Test Vehicle

ACRONYMS AND ABBREVIATIONS

Q	
QLB	Quick Look Briefing
QLRB	Quick Launch Response Boat
QQPR	Qualitative Quantitative Personnel Requirements
QSMA	Quality Safety and Mission Assurance
QWIP	Quantum Well Infrared Photo Detector
R	
RAD	Radiation
RAD HARD	Radiation Hardening
RAM	Reliability, Availability and Maintainability
RCS	Radar Cross Section
RDA	Radar Data Analysis
RDC	Radar Data Collection
RDE	Radar Data Exploitation
RDSIS	Radar Digital Signal Injection System
RDT&E	Research, Development, Test, and Evaluation
REC	Records of Environmental Consideration
REO	Responsible Engineering Organization
RF	Radio Frequency
RFA	Requests for Analysis
RFI	Requests for Information
RFP	Request for Proposal
RIDT	Re-locatable IFICS Data Terminal
RM&A	Reliability, Maintainability and Availability
ROE	Rules of Engagement
ROTHR	Relocatable Over-the-Horizon Radar
RRF	Risk Reduction Flight
RSAP	Range Safety Augmentation Program
RSMT	Range Safety Modeling Toolkit
RST	Radar System Technology
RTO	Responsible Test Organization
RTOS	Real Time Operating System
RTS	Ronald Reagan Test Site, Kwajalein, Marshall Islands
RSA	Redstone Arsenal
RV	Reentry Vehicle
S	
SADBU	Small And Disadvantaged Business Unit
SAPWAN	Special Access Wide Area Network
SAR	Selected Acquisition Report
SATCOM	Satellite Communications
SBAR	Small Business Award
SBIR	Small Business Innovative Research
SBIRS	Space Based Infrared System
SBIRS-LOW	Space Based Infrared System-Low
SBX	Sea Based Test X-Band Radar
SCD	SM-3 Cooperative Development
SCR	System Capability Review
SDACS	Solid Divert Attitude Control System
SDR	System Design Review; Software Design Review

ACRONYMS AND ABBREVIATIONS

SEAR	System Engineering Assessment Report
SEBO	Systems Engineering Behavioral Objectives
SETA	Scientific Engineering and Technical Assistance
SIAR	System Impact Assessment Report
SIPRNET	Secret Internet Protocol Router Network
SIRL	Strategic Illuminator Laser
SIL HWIL	System Integration Lab Hardware-in-the-Loop
SILL	Strategic Illuminator Laser
SIM	Simulation
SIV	Silo Interface Vault
SLAL	Small Laser Amplifier for Ladar
SLC	Super-Lattice Structure
SM	Standard Missile
SM-3	Standard Missile 3
SMDC	Space and Missile Defense Command, U.S. Army
SME	Subject Matter Expert
SMR	System Modification Request
SNL	Sandia National Lab
SOA	Service Oriented Architecture
SOLD	Simulation-Over-Live Driver
SMRTC	Single Missile Round Transportation Container
SPEAR	Scalable Panels for Efficient Affordable Radar
SRALT	Short Range Air Launch Target
SRBM	Short Range Ballistic Missile Defense
SRR	System Requirements Review; Software Readiness Review
SS	Sole Source, Summary Screens
SSAA	System Security Authorization Agreement
SSD	System Specific Documentation
SSKA	Spectral Sensing for Kill Assessment
SSTB	STSS Surrogate Test Bed
STAR	Strategic Threat Assessment Report; System Test Analysis Report
STARS	Strategic Target System
STL	System Test Lab
STRATCOM	US Strategic Command
STP	Sensor Task Plan
STS	Stockpile to Target Sequence
STSS	Satellite Tracking and Surveillance System
STTR	Small Business Technology Transfer
SWIL	Software-in-the-Loop
T	
TACL	Tailored Aperture Ceramic Laser
TADIL-J	Tactical Digital Information Link Joint
TA&R	Test Analysis & Reporting
TBM	Theater Ballistic Missile
TBMCS	Theater Battle Management Core Systems
TBONE	Theater Battle Operations Network Centric Environment
TCCB	Test Configuration Control Board
TCN	Tactical Component Network
TCR	Target Capability Roadmap
TCS	Test Control System
TCWG	Test Configuration Working Group

ACRONYMS AND ABBREVIATIONS

TDACS	Throttleable Divert and Attitude Controls System
TDP	Truth Data Package; Threat Data Packages
TDRD	Truth Data Requirements Document
TDS	Terminal Defense Segment
TEC	Test Execution Control
TEDAC	Test & Evaluation Data Analysis Capability
TEMP	Test and Evaluation Master Plan
TES	Theater Event System
TF	Task Force
TFCC	THAAD Fire Control and Communications
THAAD	Terminal High Altitude Area Defense
TIC	Test Integration Council
TILL	Threat Level Classification Algorithm
TIVS	Thermally Initiated Venting System
TMDD	Target Mission Description Document
TMW	Theater Missile Warning
TOG	Technical Objectives and Goals
TOO	Test of Opportunity; Target of Opportunity
TPFDD	Timed Phased Force Deployment Data
TRIMM	Transmit/Receive Integrated Microwave Modules
TRM	Transmit/Receive Modules
TRMP	Test Resource Master Plan
TRD	Technical Requirement Document
TSG	Tactical Support Groups
TSP	Track Sensor Payload
TTP	Tactics, Techniques, and Procedures
TTS	Transportable Telemetry Systems
T&E	Test and Evaluation
U	
UARC	University Affiliated Research Centers
UDS	Universal Documentation Status
UEWR	Upgraded Early Warning Radar
UHF	Ultra High Frequency
UID	Unique Identification
UK	United Kingdom
UKV	Unitary Kill Vehicle
UMDF	Unifying Missile Defense Functions
USCENTCOM	United States Central Command
USD	Under Secretary of Defense
USD/AT&L	Under Secretary of Defense for Acquisition, Technology, and Logistics
USEUCOM	United States European Command
USFJ	United States Forces Japan
USFK	United States Forces Korea
USNCR	United States National Capital Region
USMTF	United States Message Text Format
USNORTHCOM	United States Northern Command
USPACOM	United States Pacific Command
USSOUTH	United States South
USSTRATCOM	United States Strategic Command

ACRONYMS AND ABBREVIATIONS

V	
V&V	Verification and Validation
VAFB	Vandenberg Air Force Base, CA
VCSEL	Vertical Cavity Surface-Emitting Laser
VECP	Value Engineering Change Proposal
VLS	Vertical Launching System
VTCoIP	Video Teleconferencing Internet Protocol
VV&A	Verification, Validation and Accreditation
W	
WASP	Wide-body Airborne Sensor Platform
WESC	Wargame and Exercise Support Center
WBGS	Wide Bandgap Semiconductor
WG	Wargame
WIP	Warfighter Involvement Process
WMD	Weapons of Mass Destruction
WSC	Warfighter Support Center
WSERB	Weapons System Explosive Safety Review Board
WSMR	White Sands Missile Range, White Sands, NM
WTP	Weapons Task Plan
X	
XBR	X-Band Radar
X-Lab	Experimental Laboratory
XML	Extensible Markup Language
XTR	X-band Transportable Radar

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</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	117.602	189.229	132.220	0.000	132.220	236.875	239.873	197.118	197.852	0	1,310.769
<i>WX25: Advanced Technology Development</i>	112.003	186.954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	298.957
<i>MD25: Advanced Technology</i>	0.000	0.000	127.236	0.000	127.236	227.522	231.430	190.066	189.940	Continuing	Continuing
<i>ZX40: Program-Wide Support</i>	5.599	2.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	7.874
<i>MD40: Program Wide Support</i>	0.000	0.000	4.984	0.000	4.984	9.353	8.443	7.052	7.912	Continuing	Continuing

Note

In FY 2011, funding for Hercules Program Element 0603897C appears in the BMD Technology Program Element 0603175C.

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects WX25 and ZX40 for FY 2009-FY 2010 are now captured in Projects MD25 and MD40.

A. Mission Description and Budget Item Justification

The FY 2011 program is balanced, reflecting the goals of the current Missile Defense Program: Continue a defense of the territory of the United States against rogue nation ballistic missile threats, Enhance missile defense to defend our deployed forces, allies, and friends against regional threats, Prove our Ballistic Missile Defense System works before making production decisions, Deliver reliable, high quality, and fiscally sustainable missile defense products, and develop future missile defense capabilities that are adaptable and responsive to intelligence based judgments including defeating large missile raid sizes of all ranges early in their flight.

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 intercepts early in a threat missile's 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.

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>
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A robust advanced missile defense technology development program is part of the MDA strategy to hedge against future threat uncertainties. The advanced technology effort is focused on 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, minimize the potential impact of debris, and reduce the number of interceptors required to defeat a large raid of threat missiles in next and future generations.

The technology development effort will demonstrate the maturity of missile defense for threat segments emerging in next and future generations. This technology development is based on the BMDS integrated Build D foundation, including increased BMDS sensor resource management, the capability of BMDS weapons to engage ballistic missiles utilizing BMD System track data, and limited system level hit assessment to be used by the new forward based BMDS sensors (e.g. Airborne Infrared) and interceptors (e.g. SM-3 Block IIB) in the capability improvement phases of Phased Adaptive Architecture to allow earlier intercepts of longer range threats. We do this by conducting a series of ground and flight tests to enable thorough assessment of each BMDS sensor to understand its potential to provide the position, velocity and discrimination data for lethal objects with sufficient accuracy and low enough latency (i.e., Quality of Service (QoS)) to enable Command and Control, Battle Management and Communications (C2BMC) and BMDS interceptors to complete ballistic missile engagements. These ground and flight tests demonstrate 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 engagements.

The Advanced Technology program also seeks out and invests in the next generation and game changing technology by executing research and development to address the threats we expect to face in the far term. The bottom line is that we are working to achieve a balance of missile defense capabilities that will provide the best protection today and tomorrow.

The three major goals for Advanced Technology are:

- Pursue cost and operationally effective capabilities to hedge against future threat uncertainties.
- Develop and demonstrate the maturity of the components of future BMDS architectures, in next and future generations, by conducting a series of experiments to enable thorough assessment of this capability.
- Leverage technology investments of other DoD organizations, industry, other government agencies and international partners.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>
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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	119.308	109.760	0.000	0.000	0.000
Current President's Budget	117.602	189.229	132.220	0.000	132.220
Total Adjustments	-1.706	79.469	132.220	0.000	132.220
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		79.469			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.047	0.000			
• SBIR/STTR Transfer	-1.753	0.000			
• Other Adjustment Detail	0.000	0.000	132.220	0.000	132.220

Change Summary Explanation

FY 2009 decrease is a result of MDA programmatic changes.

FY 2010 increase is a result of Congressional actions.

No FY 2011 data provided in PB10.

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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603175C: <i>Ballistic Missile Defense Technology</i>				WX25: <i>Advanced Technology Development</i>			
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
WX25: <i>Advanced Technology Development</i>	112.003	186.954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	298.957

Note

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. MDA has defined five focus areas or Strategic Technology Portfolios: Persistent Sensors; Pervasive Weapons; Global Battle Management; Effective Targeting; and Effectiveness in Adverse Environments. MDA is focusing efforts among each portfolio that result in 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 minimizing the need for costly salvos, 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.

The Advanced Technology also seeks to develop new innovative concepts and technologies that can be applied to stay ahead of the threat, improve system performance, and lower life-cycle costs. The Advanced Technology program will invest across the five strategic technology portfolios in low Technology Readiness Level-High payoff technologies with priorities in electro-optical and infrared and radio frequency Sensor Technologies to achieve Persistent Sensor Coverage and support early intercepts; Directed Energy and Interceptor Technologies to enable early engagements; Battle Management, Kill Assessment and Data Processing technologies to improve BMDS engagement success; and Material and Algorithms to ensure effective operations under stressing conditions.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Sensors Technology See Description Below <i>FY 2009 Accomplishments:</i> Passive Electro-optical and Infrared Technology	48.262	0.000	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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT WX25: <i>Advanced Technology Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continued improvement of type II Strained Layered Super-lattice material quality and passivation.</p> <p>Increased quantum efficiency via optimized material quality and device structure design. Reduced noise current by more than a factor of 2 (compared to FY 2008) through innovation in device structure. Developed Strained Layered Super-lattice Focal Plane Array in 256x320 format for future Kill Vehicle seekers. Sustained optimization efforts to reduce the buffer layer dislocation defects of the mercury cadmium telluride on silicon substrate.</p> <p>Procured mercury cadmium telluride on gallium arsenide Focal Plane Array from Selex and started test under low background. Delivered an optimized 512x512 single-color long-wavelength focal plane array for lab testing. Continued efforts to develop a qualified domestic vendor for 211 cadmium zinc telluride substrate. Delivered 1k x 1k two-color Quantum Well Infrared Photodetector arrays for lab test for the purpose of Airborne Laser (ABL) Block upgrades, and for increasing the technology readiness level.</p> <p>Continued to develop 2k x 2k two-color (two Infrared wavebands) Quantum Well Infrared Photodetectors for ABL Block upgrades. Resumed Digital Readout Integrated Circuits effort for the purpose of providing 256x256 and 512x512 two-color Readout Integrated Circuits with high performance features not available from conventional Readout Integrated Circuits. Started Fast Focal Plane Array program to promote horizontally integrated industry effort to demonstrate Strained Layered Super-lattice fabrication capability. Radar System Technology</p> <p>Fabricated, assembled, integrated and chamber tested element Scalable Panels for Efficient Affordable Radar Increment 1 radio frequency panel.</p>					

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT WX25: <i>Advanced Technology Development</i>			
B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Initiated design activities for Scalable Panels for Efficient Affordable Radar Increment 2 radio frequency panel array development to further improve performance and reduce cost.</p> <p>Continued development of gallium nitride monolithic microwave integrated circuit for the Next Generation Transmit Receive Integrated Multi-Channel Module.</p> <p>Continued the Radar Trade Study to identify key enabling radar technologies and architectures that offer significantly improved BMDS performance at a reduced cost.</p> <p>Initiated gallium nitride producibility program to mature manufacturing processes for gallium nitride monolithic microwave integrated circuits.</p> <p>Early Launch Detection and Tracking Technology</p> <p>Began initial test for verification and validation of Hypertemporal Infrared processing algorithms into ground processing station for existing Overhead Persistent Infrared asset.</p> <p>Conducted ground tests of operational Hypertemporal Infrared sensor.</p> <p>Spectral Sensing for Kill Assessment</p> <p>Restructured Kill Assessment program into functions (Hit/Hit Assessment, Kill Assessment and Warhead Typing).</p> <p>Continued developing roadmap leading from program initiation to potential transition of functional capabilities.</p> <p>Complete development of high speed spectrometer instrument package for support of data collection during intercept flight tests.</p> <p>Continued to develop ground based experiment strategies to improve models of impact phenomena and the comparison of model output with flight test data.</p> <p>Continued to improve decision algorithm logic to enable hit/kill assessment from multi spectral radiometry measurement of impact flash signatures after kinetic kill intercepts.</p> <p><i>FY 2010 Plans:</i> NA</p>					

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT WX25: <i>Advanced Technology Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Weapons Technology</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Laser Technology Program</p> <p>Chemical Oxygen Iodine Laser (COIL) Improvements - Conducted sub scale deuterated fuels demonstration.</p> <p>Advanced Track Illuminator Laser (ATILL) - Conducted Interim Design Review for a 6kW illuminator and conduct half-power demonstration.</p> <p>High Brightness / High Efficiency Lasers - Characterized a ceramic laser.</p> <p>Fiber Laser Beam Combining - Demonstrated an 8-fiber Coherent Array.</p> <p>Spherical Primary Optical Telescope Optics - Completed Mirror Segment one of three to demonstrate wave front sensing and control utilizing the Spherical Primary Optical Telescope test bed. Mirror Segments two and three are still in production.</p> <p>Interceptor Technology Program</p> <p>Propulsion: Demonstrated Hydrazine Ammonium Nitride Micro-thrusters performance, including thrust, response time, and longevity.</p> <p>Structures and Materials: Demonstrated strength, weight and radiation hardening properties of advanced materials through analysis and coupon characterization.</p> <p>Lethality Enhancement - Demonstrated component lethality with light gas gun testing.</p>		39.999	0.000	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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT WX25: <i>Advanced Technology Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Guidance, Navigation and Control: Evaluated prototype optimal Guidance, Navigation and Control algorithm versus a representative maneuvering threat for future Hardware-in-the-Loop testing. Agile Kill Vehicle Technologies</p> <p>Agile Kill Vehicle Maneuver Demonstration - Conducted preliminary design and critical technology identification.</p> <p>Agile Kill Vehicle Seeker - Conducted preliminary design and critical technology identification. Naval Unmanned Combat Aviation System Sensor Prototype - Conducted preliminary design and critical technology identification. Air-Launched Concepts</p> <p>Developed models and integrated into operational simulation. Completed development of Air Launch Hit To Kill 6 Degrees of Freedom simulation.</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>						
<p>Innovative Technology and Analysis See Description Below</p>		4.343	0.000	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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT WX25: <i>Advanced Technology Development</i>
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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></p> <p>Managed congressionally directed and statutory and mandated technology programs. Collaborative Technology Support and Advanced Technology Broad Agency Announcement.</p> <p>Closed out the Czech Academy of Science contact and received delivery of Czech selected technology database. Awarded contract to Sparta to subcontract with a Czech Technical University for stereoscopic image analysis and conducted the first program review. Awarded contract to Northrop Grumman with a subcontract to Rosving to integrate the Danish Sensor Shooter Model with Northrop Grumman’s Global Engagement Model (GEM). Conducted the kickoff meeting and viewed a demonstration of the GEM. Participated in future Industry Partnership days with the prime contractors. Investigated a DARPA technology for possible partnership with MDA Advanced Technology Directorate. Prepared and released a two-year Advance Technology Innovation Broad Agency Announcement to seek innovative and breakthrough technologies from domestic and international sources. Received and coordinated the technical review of twenty nine White Papers generated from the Advanced Technology Innovation Cell Broad Agency Announcement. Awarded contract to Auburn/Tuskegee Universities for Hypervelocity Impact research. Awarded International contract for the Multinational BMDS. Conducted Strained Layered Super-lattice Focal Plan Array Industrial Day and awarded numerous contracts for material growth and fabrication. Missile Defense Science Technology and Research (MSTAR) Program</p> <p>Awarded contracts to two universities for research involving micro-propulsion and intercept modeling.</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>Aligned projects that dealt with aspects of lethality enhancement or gauging lethality success with MDA`s Engineering Corporate Lethality Plan that coordinates activities to enhance mission effectiveness intercepts.</p> <p>Advanced Technology Portion of the Small Business Innovation Research/Small Business Technology Transfer</p> <p>Formulated the Small Business Innovation Research/Small Business Technology Transfer technology investment strategy and associated budget. Included eight research areas and thirty nine topics under Small Business Innovation Research and seven research areas and ten topics under Small Business Technology Transfer.</p> <p>Briefed strategy to the steering committee. Implementation was approved.</p> <p>Assigned and managed research area leads to implement the strategy.</p> <p>Congressional Interest Program</p> <p>Initiated Task Order 4 of the OCEANIT contract. OCEANIT, under Task Order 4, will participate in several intercept test events and fly their detector technology aboard High Altitude Observatory to collect data to enhance MDA`s understanding of engagement success and access their technology as a viable option for the Spectral Sensing for Kill Assessment program.</p> <p>Initiated Silicon Carbide mirror production with TREX to continue to construct various Silicon Carbide mirrors that will be transitioned to DTR for insertion into ground and airborne sensors for data collection during intercept events.</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p>								

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Technology Development See Description Below <i>FY 2009 Accomplishments:</i> <i>FY 2010 Plans:</i> The FY 2010 emphasis will be on the Persistent Sensor Coverage and Pervasive Weapons Strategic Technology Portfolios (STPs), specifically focused on developing airborne infrared sensor capability, high performance interceptor components and the engineering and integration for an early engagement capability. Investment in the next generation and game changing technologies will continue with an emphasis on efforts enabling or improving the early engagement capability. STP 1 - Persistent Sensor Coverage - Develop electro-optical and infrared and radio frequency technologies for persistent sensor coverage. Develop technologies that improve the performance of the current sensors and significantly reduce the overall life-cycle cost, expanding the battle space to provide early and continuous sensor coverage. Develop electro-optical and infrared sensors for all-weather cueing and typing to provide robust, early launch detection and tracking of ballistic missile launches resulting in a seamless birth to death coverage with higher performing sensors. Multiple Phenomenology Sensors Pursue technology development in multiple phenomenology sensors. Initiate research topic areas in seamless birth-to-death coverage. Higher Performance Sensors		0.000	138.796	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>Continue contributions in Focal Plane Array Small Business Innovation Research effort. This research effort is for large field of view infrared search and track systems.</p> <p>Continue development of the Strained Layered Super-lattice program for high-performance infrared focal plane arrays.</p> <p>Continue to develop domestic substrate capability to address the manufacturing of substrates needed for focal plane arrays.</p> <p>Initiate research topic areas in higher performance sensors.</p> <p>Perform engineering design and modification efforts to develop an airborne infrared capability.</p> <p>Complete engineering modification to unmanned aerial vehicle and associated targeting system for airborne infrared functionality.</p> <p>Implement modifications to allow viewing of ballistic missiles.</p> <p>Develop algorithms and software to perform BMDS unique data processing functions.</p> <p>Conduct flight test to demonstrate targeting system location modifications, operation of BMDS software, and characterize pointing performance.</p> <p>Initiate research topic areas in phenomenology collection and analysis.</p> <p>Initiate research topic areas in sensor registration.</p> <p>STP 2 - Pervasive Weapons Coverage - Develop directed energy and interceptor technologies to enable early engagements. The application of these innovations will provide the capabilities for boost phase intercepts as well as a more robust mid-course and terminal intercept capability against more advanced threats.</p> <p>Boost Phase, Midcourse and Terminal Intercepts</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>Continue development of high brightness, high efficiency laser technology to enable future light weight, compact, high power directed energy concepts. Deliver early intercept specifications. Advanced Weapons Components</p> <p>Define high performance interceptor requirements and award contracts. Conduct propulsions system breadboard testing. Prove propulsion subsystem divert thruster performance. Prove propulsion subsystem attitude control system performance. Continue to refine guidance, navigation and control algorithms to improve system performance and reduce the kill vehicle performance requirements. Develop basis of knowledge to enable design, development and test of reactive materials for future kill vehicles with enhanced lethality. Initiate research topic areas advanced weapons components. Initiate research topic areas for new concepts in boost, mid-course and terminal intercepts.</p> <p>STP 3 - Global Battle Management - Battle Management/fusion/tracking algorithms and Kill Assessment capabilities to improve engagement success. Develop options for a global engagement management and fire control architecture that will allow any platform in the network to engage anytime, anywhere based on available fire control data. Sensors and decision logic which exploits the physics and phenomenology associated with interceptor engagement of hostile reentry vehicles (RVs) to enable Assessment of Engagement Success.</p> <p>Decision Making</p> <p>Initiate research topic areas in global battle management decision making. Initiate research topic areas for robust and reliable communications.</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>STP 4 - Effective Targeting - Develop sensors and algorithms to enhance the probability of kill. This includes innovative systems that will provide the BMDS with a precision tracking capability and radio frequency radar technologies that will enhance system sensitivity.</p> <p>Effective Target Selections</p> <p>Continue development in Advanced Track Illuminator Laser. Continue development of Fiber Laser Beam Combining technologies. Initiate research topic areas in effective target selections. Ability to Determine Discrimination Features</p> <p>Continue development of high performance radio frequency amplifier technology to improve performance and reliability.</p> <p>STP 5 - Effectiveness in Adverse Environments - Develop effective BMDS capabilities under stressing conditions. Develop capabilities in radar sensing focusing on revolutionary technology associated with low-power-density radar systems, miniaturized components to enable next generation small and lightweight kill vehicles and space products and new system concepts that defeat targets and evolving threats.</p> <p>Initiate research topic areas for operations in adverse natural environments. Countermeasures</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>Continue development of Scalable Panels for Efficient Affordable Radar Spiral 2 radio frequency panels to improve detection range, increase number of tracking beams, and develop improved waveforms. Operation in a Nuclear Environment (OPINE)</p> <p>Continue development of structures with advanced materials to enable the use of material properties for the relevant environments.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Program Office See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> This includes the management of the Strategic Technology Portfolios (STPs) 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.</p>		0.000	26.301	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
Support activities for technology development. <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA						
Statutory and Mandated See Description Below <i>FY 2009 Accomplishments:</i> Technology Applications Program Conducted Technology Applications Reviews to assist MDA-funded technology developers find and enter technology transfer opportunities beyond MDA- applications. Conducted Business Focus Workshops with MDA Small Business Innovative Research Phase I companies to help develop a successful business model for their technology early in the development cycle. Published the MDA Technology Applications annual report, The Spirit of Innovation, and a report on biomedical and life science technology transfer from MDA technology on the Web. Administered, updated, and expanded MDA's dedicated Web site for technology transfer. Improved Technology Applications program information resident on the MDA portal. Continued to manage and continually update the Technology Applications program's internal data handling and tracking system SpinTrack to manage all aspects of the Technology Applications program including historical data. Continued to work with the program managers of the MDA Technology Applications to provide support for duties such as attendance at DoD's Defense Technology Transfer Working Group		1.611	1.290	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>meetings, Federal Laboratory Consortium for Technology Transfer (FLC) activities, MDA symposia and conferences, and Industry Participation Days with major defense contractors. Historically Black Colleges and Universities/Minority Institutions</p> <p>Projects that dealt with lethality were aligned to the MDA Corporate Lethality Plan. Close out Historically Black Colleges and Universities/Minority Institutions contracts that conducted research involving target identification, tracking and destruction.</p> <p><i>FY 2010 Plans:</i> Conduct technology applications reviews and business focus workshops. Assist in accelerating technology maturation.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Congressional Action See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Provided programmatic oversight and technical influence for the following programs:</p> <p>Multiple-Target-Tracking Sensor-Array Technology (MOST) Night Vision Sensor</p>		6.000	8.000	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 2010 Plans:</i> Provide programmatic oversight and technical influence for the following programs:</p> <p>Multiple-Target-Tracking Sensor-Array Technology (MOST) Advanced Battery Technology Missile Activity Characteristics</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Advanced Communications Technology See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Advanced Communications effort focuses on developing the next generation command and control and battle management concepts and the enabling technologies required to implement them among the BMDS. These activities will develop, integrate, and demonstrate advanced Command and Control, Battle Management and Communications (C2BMC) concepts and enabling technologies for improving BMDS performance across all mission areas to include defense of friends and allies and layers of defense including early intercept. Advanced BMDS integration concepts and techniques are demonstrated and evaluated in system-wide flight tests to facilitate the transition to the operational C2BMC.</p>		11.788	12.567	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>Commenced/continued activities to enable the integration of advanced C2BMC capabilities into BMDS subsystems.</p> <p>Demonstrated and evaluated advanced C2BMC capabilities in live-flight test events using the C2BMC X-Lab.</p> <p>Aligned war fighter concept of operations (CONOPS) with appropriate engagement sequence group (ESG) in the areas of Overhead Persistent Infra-Red (OPIR) phase tracking and classification, sensor resource management, weapons resource management, post-intercept debris information flow, and communication with allies.</p> <p>Developed and demonstrated next generation command and control capabilities.</p> <p>Continued to develop, demonstrate, and evolve net centric services to demonstrate the value of exchange C2BMC data with other mission areas system to improve warfighting capability.</p> <p>Developed and demonstrated next generation sensor netting and sensor resource management techniques.</p> <p>Conducted sensor netting experiments associated with tracking, integrated discrimination, sensor resource tasking, and communications/bandwidth constraints.</p> <p>Continued to evolve models and tools to assess the next generation algorithms.</p> <p>Developed and demonstrated advanced battle management and integrated fire control capabilities.</p> <p>Conducted architecture assessments of battle management functions federated between C2BMC and various allied/coalition partners.</p> <p>Integrated the CONOPS information and engagement sequence group (ESG) priorities for advanced and emerging BMDS capabilities (such as Early Intercept concepts) into battle management constructs.</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 2010 Plans:</i> Commence/continue activities to enable the integration of advanced C2BMC capabilities into BMDS subsystems.</p> <p>Demonstrate and evaluate advanced C2BMC capabilities in live-flight test events using the C2BMC X-Lab.</p> <p>Continue to evolve war fighter concept of operations (CONOPS) with appropriate engagement sequence group in the areas of boost phase tracking and classification, sensor resource management, weapons resource management, post-intercept debris information flow, and communication with allies. Develop and demonstrate next generation sensor netting and sensor resource management techniques.</p> <p>Conduct sensor netting experiments associated with tracking, integrated discrimination, sensor resource tasking, and communications/bandwidth constraints. Develop and demonstrate advanced battle management and integrated fire control capabilities.</p> <p>Conduct architecture assessments of battle management functions federated within C2BMC and various allied/coalition partners. Integrate the CONOPS information and engagement sequence group priorities for advanced and emerging BMDS capabilities (such as Early Intercept and Space Tracking and Surveillance System (STSS)) into battle management constructs.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					

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B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Accomplishments/Planned Programs Subtotals	112.003	186.954	0.000	0.000	0.000

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>	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
• 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
	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117

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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 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>
• 0603895C: <i>BMD SYSTEM SPACE PROGRAM</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
• 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
	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932

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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 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>
• 0604883C: <i>PRECISION TRACKING SPACE SYSTEM</i>			111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339
• 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

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 the 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-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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</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
MD25: <i>Advanced Technology</i>	0.000	0.000	127.236	0.000	127.236	227.522	231.430	190.066	189.940	Continuing	Continuing

Note

A. Mission Description and Budget Item Justification

A robust advanced missile defense technology development program is part of our strategy to hedge against future threat uncertainties that are emerging in next and future generations. The efforts are focused on 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. Near-term technology development efforts include enhanced command, control battle management and communication capabilities, high performance interceptor and kill vehicle components, and experiments to integrate new technologies and demonstrate early intercept concepts against a large raid.

In addition to conducting dedicated early intercept experiments, the agency will invest in science and technology to improve upon the initial early intercept capability and seek out next generation and game changing technologies. As threats expand and mature, the need for continuously available sensors and faster interceptors supports investment for advanced sensors to achieve persistent sensor coverage and advanced propulsion and lightweight kill vehicle components to increase the speed of our interceptors. In addition, the agency is beginning several new technology initiatives that will demand new ideas and new solutions from industry. This program element also executes the management and technical oversight of the Small Business Innovative Research and Small Business Technology Transfer to help focus those efforts. This Program Element does not fund the awards.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
High Performance Interceptor Components See Description Below <i>FY 2009 Accomplishments:</i> NA	0.000	0.000	40.790	0.000	40.790

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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 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>		PROJECT MD25: <i>Advanced Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> This program develops components that increase the speed of our interceptors with advanced divert capability, faster boosters, and lighter kill vehicles. The technical goals include increased maneuverability; acquisition and homing on targets during boost phase; capability to execute maneuvers with high fidelity data from external sensors; and provide high fidelity seeker data to BMDS command, control battle management and communication.</p> <p>In FY 2011, we will implement the detailed program plan developed during FY 2010 for high performance interceptor component development. We plan near term technology demonstrations for lightweight liquid divert and attitude control systems and axial control stages, both liquid and solid.</p> <p>Prove divert and attitude control system integrated performance of a flight weight prototype in a static test at sea level. Prove integrated upper stage propulsion performance of a breadboard unit in a static fire test at sea level. Characterize flight weight feed system dynamics and regulator performance for a liquid upper stage. Validate propellant tank design and expulsion performance for a liquid upper stage. Validate upper stage thruster performance in a static firing test at sea level. Implement a prototype kill vehicle processor-in-the-loop test bed to validate guidance algorithms and software.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
Enhanced Command, Control, Battle Management and Communication				0.000	0.000	51.800	0.000	51.800

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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 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>		PROJECT MD25: <i>Advanced Technology</i>				
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> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Enhanced Command, Control, Battle Management and Communication executes a technology development strategy that integrates advanced technology components with existing Ballistic Missile Defense systems to demonstrate capability improvements through a series of experiments. This development strategy will focus on two main objectives. The first objective is to explore via analysis, modeling, and experimentation, the performance benefit of migrating the architecture to a net-centric, service oriented architecture. The second objective will combine National sensing capabilities with Airborne Infrared Systems capabilities to enhance the BMDS's overall capability. This includes the development of experimental battle management and sensor processing capabilities for both unmanned aerial vehicles and space-based sensors.</p> <p>Demonstrate experimental net-centric, service oriented architecture for both sensor resource and battle management.</p> <p>Demonstrate multi-sensor (Airborne Infrared and space sensors) signal processing capabilities to provide the fundamental components of Quality of Service (QoS) of Command and Control, Battle Management and Communications (C2BMC) and sensor data (position, velocity, and discrimination of sufficient accuracy and low enough latency to complete ballistic missile engagements) in realistic test environments.</p>								

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The collected QoS of Command and Control, Battle Management and communications (C2BMC) and sensor data forms the basis for BMD System Engineering technical trade studies between sensors and guided interceptors to allocate functions and data accuracies.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Science and Technology See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> The Science and Technology investment addresses future threat uncertainties. The Innovation program seeks leap ahead, innovative and breakthrough technologies from domestic and international sources. Research areas may include next generation radars, electro-optical infrared passive sensors, interceptors, algorithms and software, innovative game changing technologies, laser technologies, advanced power systems, and adaptive communications techniques. This activity also conducts Education Outreach activities, manages the Missile Defense Science Technology Advanced Research (MSTAR) Program and executes the MDA Small Business Innovative Research (SBIR)/Small Business Technology Transfer (STTR) Program to include the solicitation, evaluation, selection, and technical management and oversight of all awards.</p>		0.000	0.000	20.510	0.000	20.510

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The Science & Technology program will utilize Broad Agency Announcements, University research and SBIR/STTR projects to develop technologies that improve the performance and/or provide cost effective alternatives.</p> <p>Next Generation Radar</p> <p>Build and test next generation radar components.</p> <p>Electro-optical infrared passive sensors</p> <p>Identify and initiate research in key electro-optical infrared functional areas via the SBIR/STTR and MSTAR programs.</p> <p>Algorithms and Software</p> <p>Algorithm development for net-centric operations and adaptive communication systems</p> <p>Innovation</p> <p>Facilitate the transition of SBIR technology into the BMDS through partnership days. Receive and coordinate the technical review of White Papers generated from the Advanced Technology and Inside Science Technology Advanced Research Broad Agency Announcements. Manage new and existing awards to promulgate ``game changing`` technology into the BMDS. Conduct annual MDA Math Challenge Week.</p> <p>SBIR/STTR Program</p>					

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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 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>		PROJECT MD25: <i>Advanced Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Develop research topics and solicitation for BMDS capabilities to hedge against future threat uncertainties. Execute the MDA SBIR/STTR solicitation. <i>FY 2011 OCO Plans:</i> NA								
Statutory and Mandated See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> Conduct Technology Applications Reviews to assist MDA-funded technology developers find and enter technology transfer opportunities beyond MDA applications. Conduct Business Focus Workshops with MDA SBIR Phase I companies to help develop a successful business model for their technology early in the development cycle. Publish the MDA Technology Applications annual report, The Spirit of Innovation, and a report on biomedical and life science technology transfer from MDA technology on the Web. Administer, update, and expand MDA's dedicated Web site for technology transfer. Continue to manage and continually update the Technology Applications program's internal data handling and tracking system SpinTrack to manage all aspects of the Technology Applications program including historical data.				0.000	0.000	1.290	0.000	1.290

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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 3: <i>Advanced Technology Development (ATD)</i>		R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>		PROJECT MD25: <i>Advanced Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue to work with the program managers of the MDA Technology Applications to provide support for duties such as attendance at DoD's Defense Technology Transfer Working Group meetings, Federal Laboratory Consortium for Technology Transfer (FLC) activities, MDA symposia and conferences, and Industry Participation Days with major defense contractors.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Advanced Communications Technology</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i></p> <p><i>FY 2010 Plans:</i></p> <p><i>FY 2011 Base Plans:</i> The Advanced Communications effort focuses on developing the next generation command and control and battle management concepts and the enabling technologies required to implement them among the BMDS. These activities will develop, integrate, and demonstrate advanced Command and Control, Battle Management and Communications (C2BMC) concepts and enabling technologies for improving BMDS performance across all mission areas and layers of defense including Early Intercept (EI) to include defense of friends and allies. Advanced BMDS integration concepts and techniques are demonstrated and evaluated in system-wide flight tests to facilitate the transition to the operational C2BMC.</p> <p>Commence/continue activities to enable the integration of advanced C2BMC capabilities into BMDS subsystems.</p>				0.000	0.000	12.846	0.000	12.846

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

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Demonstrate and evaluate advanced C2BMC capabilities in live-flight test events using the C2BMC X-Lab.</p> <p>Continue to evolve war fighter concept of operations (CONOPS) with appropriate engagement sequence group (ESG) in the areas of boost phase tracking and classification, sensor resource management, weapons resource management, post-intercept debris information flow, and communication with allies and friendly nations.</p> <p>Develop and demonstrate next generation sensor netting and sensor resource management techniques.</p> <p>Conduct sensor netting experiments associated with tracking, integrated discrimination, sensor resource tasking, and Communications/bandwidth constraints.</p> <p>Develop and demonstrate advanced battle management (BM) and integrated fire control capabilities.</p> <p>Conduct architecture assessments of BM functions federated within C2BMC and various allied/coalition partners and friendly nations.</p> <p>Integrate the CONOPS information and ESG priorities for advanced and emerging BMDS capabilities (such as Early Intercept and Space Tracking and Surveillance System (STSS)) into battle management constructs.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	127.236	0.000	127.236

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</i>
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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>	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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</i>
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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>
• 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
• 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

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD25: <i>Advanced Technology</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

MDA's fiscal year FY 2011 budget submission reflects an emphasis on early intercept research and development. The acquisition strategy to conduct this technology development effort consists of three focus areas. 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 the 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-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603175C: <i>Ballistic Missile Defense Technology</i>				ZX40: <i>Program-Wide Support</i>			
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>	5.599	2.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	7.874

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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	5.599	2.275	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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</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
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	5.599	2.275	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>
• 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
• 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

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603175C: <i>Ballistic Missile Defense Technology</i>				MD40: <i>Program Wide Support</i>			
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
MD40: <i>Program Wide Support</i>	0.000	0.000	4.984	0.000	4.984	9.353	8.443	7.052	7.912	Continuing	Continuing

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA	0.000	0.000	4.984	0.000	4.984

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD40: <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	0.000	0.000	4.984	0.000	4.984

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>
• 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
• 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

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD40: <i>Program Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603175C: <i>Ballistic Missile Defense Technology</i>	PROJECT MD40: <i>Program Wide Support</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

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-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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</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	0.000	0.000	98.688	0.000	98.688	101.371	103.449	104.572	104.141	Continuing	Continuing
MD69: <i>Directed Energy Research</i>	0.000	0.000	95.398	0.000	95.398	97.900	100.000	101.000	100.400	Continuing	Continuing
MD40: <i>Program-Wide Support</i>	0.000	0.000	3.290	0.000	3.290	3.471	3.449	3.572	3.741	Continuing	Continuing

Note
Beginning in FY 2011, the Boost Defense Segment program element, 0603883C, will transfer to the Directed Energy Research program element 0603901C.

A. Mission Description and Budget Item Justification

The Missile Defense Agency will conduct research into the transmission and control of directed energy through and above the atmosphere at operationally relevant ranges. The research will include investigation of multiple high energy laser technologies, characterization of the atmosphere as it relates to directed energy propagation, improving beam control, and improving modeling and simulation. The agency will work with Director of Defense Research and Engineering and High Energy Laser Joint Technology Office to establish a systems engineering based strategy for the research, development, test and evaluation of high energy laser technologies. In FY 2011, the agency will pursue additional directed energy technologies to hedge against future threats while continuing to seek opportunities to integrate concepts into the aircraft laser test platform for experimentation. A robust advanced missile defense technology development program is part of our strategy to hedge against future threat uncertainties.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>
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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	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	98.688	0.000	98.688
Total Adjustments	0.000	0.000	98.688	0.000	98.688
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustment Detail	0.000	0.000	98.688	0.000	98.688

Change Summary Explanation

No FY 2011 data provided in PB10.

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD69: <i>Directed Energy Research</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
MD69: <i>Directed Energy Research</i>	0.000	0.000	95.398	0.000	95.398	97.900	100.000	101.000	100.400	Continuing	Continuing

Note

NA

A. Mission Description and Budget Item Justification

Following the planned Airborne Laser testing in FY 2010, the Director of Defense Research and Engineering will assess whether keeping the ABL aircraft as a science and technology test bed for high power laser research and development is cost effective. Working with Director of Defense Research and Engineering and the High Energy Laser Joint Technology Office, we will maintain the ABL aircraft as a potential test bed for flight and ground tests to characterize high energy laser beam propagation pending results of the Director of Defense Research and Engineering study. The program also plans flight and ground testing that will characterize laser effects in various engagements and environments to anchor system models that will be used to shape technology development for future missile defense directed energy efforts.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Directed Energy Research See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA	0.000	0.000	95.398	0.000	95.398

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD69: <i>Directed Energy Research</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> MDA will transition the Airborne Laser aircraft to a national test platform for testing advanced directed energy technologies for missile defense. Working with ;Director of Defense ;Research and Engineering ;and the High Energy Laser Joint Technology Office, we will use the aircraft test platform in flight and ground tests to characterize high-energy laser beam propagation.</p> <p>Characterize the effects of atmospheric propagation, boundary layer and jitter effects with varying engagement geometries. Field test data for model validation and verification. Test platform for integrated laser weapon system demonstrations. Anchor models for general airborne directed energy assets. Investigate advanced technologies to increase efficiency of beam control. Investigate software algorithms for improvements to beam control and fire control. With the Joint Technology Office, apply directed energy technologies to hedge against future threats.</p> <p>Develop and experiment with diode-pumped gas lasers, fiber lasers, solid state and advanced high-power laser optics. Investigate lethality, counter-counter measures, beam propagation, modeling, laser beam combining, and additional innovative areas. Conduct analysis of alternatives to select out-year laser investments.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Accomplishments/Planned Programs Subtotals		0.000	0.000	95.398	0.000	95.398

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD69: <i>Directed Energy Research</i>
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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD69: <i>Directed Energy Research</i>
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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>
• 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
• 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

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD69: <i>Directed Energy Research</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

MDA's fiscal year FY 2011 budget submission reflects 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 the 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-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 3: <i>Advanced Technology Development (ATD)</i>				R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>				PROJECT MD40: <i>Program-Wide Support</i>			
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>MD40: Program-Wide Support</i>	0.000	0.000	3.290	0.000	3.290	3.471	3.449	3.572	3.741	Continuing	Continuing

Note

NA

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> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA	0.000	0.000	3.290	0.000	3.290

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD40: <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
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	3.290	0.000	3.290

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

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603901C: <i>DIRECTED ENERGY RESEARCH</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

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

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</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	951.414	715.732	436.482	0.000	436.482	250.275	336.711	500.983	521.717	Continuing	Continuing
BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>	728.934	552.113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	1,281.047
EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>	0.000	60.126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	60.126
XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>	21.796	49.595	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	71.391
MD07: <i>THAAD</i>	0.000	0.000	420.463	0.000	420.463	240.177	324.264	477.944	498.688	Continuing	Continuing
WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	11.656	22.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	33.833
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	0.000	0.000	1.200	0.000	1.200	1.230	1.270	1.308	1.347	Continuing	Continuing
WX26: <i>Israeli ARROW Program</i>	93.194	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	93.194
WX34: <i>Short Range Ballistic Missile Defense</i>	70.786	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	70.786
ZX40: <i>Program-Wide Support</i>	25.048	31.721	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	56.769
MD40: <i>Program-Wide Support</i>	0.000	0.000	14.819	0.000	14.819	8.868	11.177	21.731	21.682	Continuing	Continuing

Note
In accordance with the Missile Defense Agency revised budget structure, the contents previously planned in Projects EX07 (Block 5.0 Development) and Project XX07 (Sustainment) for FY 2009-FY 2010 are now captured in Project MD07.

The FY 2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated Ballistic Missile Defense System (BMDS) architecture to counter existing regional threats, continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

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The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities -- weapons, sensors, and Command and Control/Battle Management and Communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile's location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack -- all connected by a unifying C2BMC system. As a result, an effort funded in a Program Element may be critical to the success of efforts in the other Program Elements -- we refer to these connections as "interdependencies". Throughout the budget justification materials we have attempted to highlight interdependencies in order to fully explain the relationship between different parts of the proposed program.

A. Mission Description and Budget Item Justification

We are developing and fielding a range of land based terminal capabilities to counter Short Range Ballistic Missiles (SRBMs) to protect forces deployed abroad, allies and friends. The land based SRBM defense capabilities of BMDS consist of the Patriot Advanced Capability-3 PAC-3) and Terminal High Altitude Area Defense (THAAD). THAAD is capable of countering Medium-Range Ballistic Missiles (MRBM) to protect deployed forces, critical assets on allied territory, and population centers. THAAD is a near-term transportable capability that will enhance the ability of Combatant Commanders to wage theater wars by intercepting SRBM and MRBM threats using hit-to-kill technologies. The THAAD missile is uniquely designed to intercept targets both inside and outside the Earth's atmosphere, making the use of countermeasures against THAAD in their terminal phase difficult.

The Terminal Defense Segment (TDS) Program Element (PE) funds the land based terminal-related element portions of Regional Defense Capabilities, Sustainment, and other Terminal-related mission area investment activities. The Ballistic Missile Defense System (BMDS) elements in terminal defense pursue development and selective upgrades of interceptor defense capabilities that engage short to medium-range ballistic missiles in the late mid-course and terminal phase of their trajectory. The elements have the capability to engage and negate ballistic missiles and asymmetric threats in both the late mid-course (outside the atmosphere) and terminal phases (inside the atmosphere) of their trajectory, making countermeasures difficult and significantly mitigating Weapons of Mass Destruction (WMD). This adds significant capability to the BMDS as the threat missiles transition from the mid-course to terminal phase.

Ballistic Missile Defense (BMD) Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of THAAD element to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels.

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MDA has a set of Unifying Missile Defense Functions (UMDFs), which increase the effectiveness of the BMD System, (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These UMDF efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). Unifying Missile Defense Functions (UMDFs) are implemented across the Ballistic Missile Defense System (BMDS) elements to create and utilize system level data and decisions that enable Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. THAAD Element Level testing is reflected in this Program Element (PE). This PE also provides THAAD participation in the consolidated MDA-wide System Test Program and the resources for the planning, design, execution, and management of THAAD in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP). The THAAD investment in compliance with the IMTP across the three projects (BX07, EX07, MD07) is as follows (\$M): FY 2010- \$139.4; FY 2011- \$138.7; FY 2012- \$149.0; FY 2013- \$145.1; FY 2014- \$172.3 FY 2015- \$200.1; TOTAL- \$944.6.

The THAAD element integrates five major components (Interceptors, Launchers, Army Navy/Transportable Radar Surveillance - Type 2 (AN/TPY-2) Radars, THAAD Fire Control and Communication (TFCC), and THAAD-Peculiar Support Equipment) into the BMDS. The THAAD interceptor is a certified round that is propelled by a single-stage, solid-propellant rocket booster. Its kill vehicle possesses a divert and attitude control system and an infrared seeker used in destroying its target through hit-to-kill technology. The THAAD Launcher consists of the U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated interceptor round pallet and supports and secures eight ready-to-launch interceptors. The AN/TPY-2 Radar is an X-Band, solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The AN/TPY-2 Radar uses fence, volume, and cued search modes and provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The AN/TPY-2 Radar hardware is a transportable system composed of the antenna equipment unit, electronics equipment unit, cooling equipment unit, and the prime power unit. The TFCC is composed of the Tactical Operations Station, the Launch Control Station, and the Station Support Group. These three components together are called the Tactical Station Group (TSG). A TFCC includes two TSGs. The TFCC provides the engagement planning, fire control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with C2BMC and external air and missile defense and intelligence systems and agencies that are integrated into the BMDS.

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The Arrow system (developed jointly by the U.S. and Israel), another of the TDS` mission area investments, provides Israel an indigenous capability to defend against short and medium range ballistic missiles and helps ensure U.S. freedom of action in future contingencies. Arrow also provides protection against ballistic missile attacks to U.S. forces deployed to the region. Project WX26 is only applicable to FY 2009.

The Arrow program consists of the following major efforts: The Arrow System Improvement Program (ASIP) is a block upgrade of the Arrow Weapon System that enhances its capabilities against evolving regional threats. The program also includes the development of Arrow co-manufacturing capability, co-production of the interceptor, and enhancement of Arrow`s interoperability with U.S. Ballistic Missile Defense Systems (BMDS) via a Joint Tactical Information Data System (JTIDS)/ Link-16 common communication architecture. The ASIP will develop upgrades to the existing Arrow Weapon System to allow Arrow to address more significant ballistic missile threats. Related Arrow activities include the Caravan Flight test campaign in the U.S., the Israeli Test Bed (ITB), and studies via the Israeli Systems Architecture and Integration (ISA&I) effort that assess Arrow`s performance relative to existing and emerging threats. Finally, the next phase of development for the Arrow Weapon System is being studied to provide Israel with an indigenous upper-tier system. This is applicable to only FY 2009.

A new joint cooperative program with Israel is the David`s Sling Weapon System (DSWS) (FY 2009 only) that is intended for Short Range Ballistic Missile Defense (SRBMD). This system is designed to counter short range rockets and serve as a low-tier to the Arrow Weapon System. This system is being designed and developed as a Joint system to meet both Israeli and U.S. requirements.

Research, Development, Test & Evaluation (RDT&E):

The THAAD element contributes to the Ballistic Missile Defense System (BMDS) by providing a capability for THAAD Interceptor to engage on Army Navy/ Transportable Radar Surveillance-Type 2 (AN/TPY-2) (THAAD Mode). When integrated into the BMDS with the BMDS Command and Control/Battle Management and Communications (C2BMC), AEGIS BMD and PATRIOT Systems, the rapidly deployable THAAD element improves the Ballistic Missile Defense Systems (BMDS) overall effectiveness by engaging threat ballistic missiles in the late mid-course and terminal phases of their trajectory.

Baseline Capability Development (BCD) (THAAD 1.0) (formerly Block 2.0) and Sustainment: THAAD incremental development began with the design and development of a significant, fundamental capability against short to medium-range Ballistic Missiles (BMs) and asymmetric threats inside and outside the atmosphere. This initial

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phase allows other BMDS Elements with Link 16 compatibility (AEGIS BMD, PATRIOT) the capability to conduct engagement coordination with THAAD. THAAD development will evolve to achieve a more robust radar discrimination, improved fire control and launcher capabilities that facilitate communications within BMDS, and forward based engagement coordination with other BMDS elements. THAAD development also provides additional capability for other BMDS elements such as the SM-3 Launch on AN/TPY-2 (THAAD Mode) Radar. Flight tests began in FY 2006 and completes in FY 2011. The THAAD element has on multiple occasions demonstrated the ability to support the objective for putting the BMDS on alert. BCD is the foundation for the acquisition and delivery of two THAAD Batteries to support operational assessment and fielding of a BMDS capability useful to the combatant commanders. The delivery of Batteries #1 and #2 consists of a basic load of 48 Interceptors, 6 Launchers, two AN/TPY-2 (THAAD Mode) Radars (one funded in the Sensors Program) and two THAAD Fire Control and Communications (TFCCs), consisting of four Tactical Support Groups (TSGs).

Common threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense (BMD) System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also used to develop the BMD System Description Document and BMD System Specification.

Advanced Capability Development (ACD) (formerly Block 5.0) and Sustainment: ACD is the next incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. This continues the concept of a rapidly deployable configuration to support the Terminal Defense Segment (TDS) mission as well as supporting the strategic surveillance missions. ACD lays the foundation for the capability to launch THAAD interceptors using data from other BMDS sensor elements, an expansion of the THAAD element's capability to provide THAAD sensor data to the BMDS in support of the UMDF. ACD initiates incorporation of integration of the BMDS Command and Control/Battle Management and Communications (C2BMC) communications, improved track correlation and engagement coordination with the BMDS, and the ability to launch THAAD interceptors based on system track and data from the BMDS Command and Control/Battle Management and Communications (C2BMC). This enhanced BMDS C2BMC interface enables the THAAD Interceptor Launch on BMD System Track capability. These enhancements are included in BMDS Integrated Build D development also includes the added capability to conduct Concurrent Test, Training, and Operations and continued participation in BMDS Integrated System Ground and Flight tests. Sustainment continues the field support and contractor logistics support for fielded Battery hardware. Beginning in FY 2011, ACD activities are included in project MD07.

Modeling and Simulation (Ballistic Missile Defense System (BMDS) & Program):

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The BMD Digital Simulations Architecture (DSA) is the primary Modeling and Simulation (M&S) System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support PA events, which provide critical system level performance data relative to all elements, system engineers, M&S developers, the OTA and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.

The BMD Single Stimulation Framework (SSF) utilizes Hardware-in-the-Loop (HWIL) assets to support primarily Ballistic Missile Defense System (BMDS) ground testing, pre and post flight test mission construction and reconstruction, portions of the training capability, Wargames, exercises and BMDS contingency studies, as well as various other use cases to enable BMDS performance in a simulated environment. Each BMDS Element supports the M&S Program by providing HWIL representations ready for integration into the BMDS system-level framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and Warfighter needs.

The THAAD element will support the BMDS HWIL Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs.

THAAD's Models and Simulations efforts are focused on Development, Verification, Validation and Accreditation (VV&A) Goals. In most cases, actions in support of these goals are conducted in parallel. Three major efforts are planned in support of Model and Simulation Development goals: (1) Continue efforts with the Integrated Simulation and Tactical Software (ISTS) model, ensuring that the Simulation is current and THAAD Flight Test Compliant and can serve as a tool for risk reduction and prediction of THAAD flight testing. (2) Maintain Hardware-in-the-Loop facility keeping pace with both hardware and software changes to support the THAAD participation in the MDA Flight Test Program, (3) Continue hardware and software development for the Simulation-Over-Live Driver (SOLD), a THAAD tool in the Missile Defense System Exercises that supports the MDA BMDS Ground Test Campaign. THAAD's development work in support of its VV&A Goals are focused on data reduction and analysis from both the MDA BMDS Ground Test Campaign and Flight Testing to ensure that the models used remain anchored with actual system performance data.

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THAAD will support System Pre Flight predictions for each system level flight test using the test framework set up with the BMDS configuration for a particular flight test. This provides the confidence in flight test execution by predicting element performance and exercising element interfaces. This work is also used to proof out the construct of the flight test to ensure if the required data and data management plan will support System Post Flight Reconstruction objectives. System Post Flight Reconstruction (SPFR) will use a Hardware-in-the-Loop (HWIL) and/or a Digital Modeling and Simulation (M&S) Environment to replicate the day of flight for the Ballistic Missile Defense System (BMDS) configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) back to the real world event. System Post Flight Reconstruction (SPFR) is used for validation (anchoring) of models and simulations. The CECs/EMEs shape and focus flight and ground tests within Test Campaigns. The net effect of this rigorous M&S accreditation is the effective operationalization of BMDS RDT&E technical capabilities by the Warfighter. Credibly quantifying BMDS capabilities and limitations, and making informed capability acceptance and employment decisions in relation to Warfighter Operations Plans (OPLANs) and Concept Plans (CONPLANs) is the goal.

There are 23 CECs and EMEs and a total of 530 possible collection opportunities for the verification, validation and accreditation (VV&A) of modeling and simulation (M&S) during flight and ground tests for the THAAD Element documented in the Integrated Master Test Plan (IMTP). The percentage of test opportunities completed at the beginning and end of each fiscal year is as follows:

FY 2009: % Complete: Beginning- 11%; Ending- 14%
FY 2010: % Complete: Beginning- 14%; Ending- 28%
FY 2011: % Complete: Beginning- 28%; Ending- 42%

The CECs/EMEs acquired in FY 2009, FY 2010, and FY 2011 are accomplished through flight and ground test events, which will build additional confidence in THAAD Models and Simulations. Specific CECs/EMEs for each flight/ground test for THAAD are listed in the latest version of the BMDS Integrated Master Test Plan (IMTP).

THAAD goals are:

- Develop, test, verify, field and manufacture THAAD capability
- Continue component development to enhance integrated BMDS capability; support the Unifying Missile Defense Function (UMDF) for Engagement, Coordination, Sensor Registration, System Track, Hit/Kill Assessment and Communications
- Test and verify enhanced integrated Ballistic Missile Defense System (BMDS) Component Capability in an increasingly complex BMDS test program
- In partnership with the Army, provide, field and sustain THAAD capability for Operational Testing and BMDS operations

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Provide Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability
Integrate THAAD into the BMDS International Strategy

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	956.686	719.465	0.000	0.000	0.000
Current President's Budget	951.414	715.732	436.482	0.000	436.482
Total Adjustments	-5.272	-3.733	436.482	0.000	436.482
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-3.733			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	8.942	0.000			
• SBIR/STTR Transfer	-14.214	0.000			
• Other Adjustment Detail	0.000	0.000	436.482	0.000	436.482

Change Summary Explanation

FY 2009 decreases were a result of SBIR/STTR transfer and other MDA adjustments.
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>BX07: Terminal High Altitude Area Defense (THAAD) Block 2.0</i>	728.934	552.113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	1,281.047
Quantity of RDT&E Articles	12	30	0	0	0	0	0	0	0		

Note

Beginning in FY 2009 the cost associated with the manufacture of AN/TPY-2 is represented under the Sensors Program. Project BX07 will end after FY 2010.

A. Mission Description and Budget Item Justification

The Terminal High Altitude Area Defense (THAAD) is an element of the Terminal Defense Segment (TDS) of the Ballistic Missile Defense System (BMDS). The THAAD element provides the capability for the THAAD Interceptor to engage ballistic missiles using the Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode). THAAD enhances the TDS by deepening, complementing, and extending the BMDS battle-space and capability to engage ballistic targets in the late mid-course and terminal phases of their trajectory. THAAD will also perform a sensor surveillance mission, providing sensor data to cue other elements of the BMDS. THAAD, in conjunction with the fielded PATRIOT System, provides the TDS and supports the objective of enhancing the BMDS capability. Five major components (Interceptors, Launchers, AN/TPY-2 (THAAD Mode) Radar, THAAD Fire Control and Communication (TFCC), and Peculiar Support Equipment) will be integrated into the THAAD element and the BMDS.

THAAD Baseline Capability Development (BCD) (THAAD 1.0) began with the design and development of a significant, fundamental capability against short to medium-range Ballistic Missiles and asymmetric threats inside and outside the atmosphere. This encompasses the following: (1) Test interceptor with inside and outside the atmosphere algorithms; (2) AN/TPY-2 (THAAD Mode) Radar with Initial Discrimination Capability; and (3) TFCC with tactical digital information link and defense design planner. The initial phase of development laid the foundation for the capability of other BMDS Elements (AEGIS, Ground Missile Defense, PATRIOT) to interoperate and conduct engagements with THAAD data via Link-16.

THAAD development evolves to achieve a more robust AN/TPY-2 (THAAD Mode) Radar discrimination, salvo firing doctrine, and the ability to operate in a full spectrum of tactical interceptor environments and survivability. To facilitate tactical employment by soldiers, it also includes TFCC embedded training, automated defense planning, and extensive interoperability using Link-16 and United States Message Text Format (USMTF) message sets with the BMDS as well as forward based engagement coordination with other BMDS elements. THAAD development provides additional capability for other BMDS elements. BCD flight tests began in FY 2006 and complete in FY 2011. THAAD on multiple occasions demonstrated the ability to support BMDS on alert. The THAAD element will support coordinated engagements with the BMDS via the Ballistic Missile Defense System (BMDS) Command and Control/Battle Management and Communications (C2BMC). BCD

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culminates in demonstrated THAAD capabilities both inside and outside the atmosphere. BCD is the foundation for the acquisition and delivery of THAAD Batteries #1 and #2 to support operational assessment and fielding of a BMDS capability useful to the Combatant Commanders. The delivery of Batteries #1 and #2 consists of a basic load of 48 Interceptors, six Launchers, two AN/TPY-2 (Terminal Mode) Radars (provided by the Sensors Directorate) and two TFCCs consisting of 4 Tactical Support Groups (TSGs) total.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Batteries #1 and #2</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i></p> <p>Batteries #1 and #2 will include a basic load of 48 Interceptors, six Launchers (1 provided by the development contract), two Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode) Radars (provided by Sensors Directorate), 4 THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) (2 provided by the development contract), the required Peculiar and Common Support Equipment, and two Interceptors for flight test (provided to development contract). Delivery of Battery hardware will begin in FY 2009. Following operational testing, the Batteries will be fielded to the Army.</p> <p>Delivered two TFCC TSGs, two Launchers Continued the fabrication and assembly of initial spares Completed fielding of Battery #1 to US Army 11th Brigade, Alpha Battery 4th Air Defense Regiment Initiated the fabrication and assembly of Battery Support Center (BSC) Initiated the fabrication and assembly of Interim Contractor Support System (ICSS) Conducted Ground Test Element Integration Checkout (EICO) for Battery 1 Completed 24/Missile Round Trainers (MRTs) 16 weighted and 8 un-weighted</p> <p><i>FY 2010 Plans:</i></p> <p>Deliver three Launchers Deliver 25 Interceptors and 1 flight test vehicle</p>	193.594	187.873	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
Complete BSC #2 Complete ICSS #2 <i>FY 2011 Base Plans:</i> All Batteries #1 and #2 activities transition to project MD07 in FY 2011 <i>FY 2011 OCO Plans:</i> NA					
Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar See Description Below <i>FY 2009 Accomplishments:</i> The AN/TPY-2 (THAAD Mode) Radar is a solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The radar uses fence, volume, and cued search modes, and provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The radar hardware is a transportable system composed of the Antenna Equipment Unit, Electronics Equipment Unit, Cooling Equipment Unit, and the Prime Power Unit (PPU). Beginning in FY 2009, the manufacturing cost associated with the AN/TPY-2 (THAAD Mode) Radars for THAAD Batteries are provided for under the Sensors Program Element. Continued to support the flight test program at Pacific Missile Range Facility (PMRF) Completed development of Radio Frequency Scene Generation capability to test advanced algorithms ** Completed Formal Release of tactical software Build 4.2.4 Completed two Prime Power Units (PPUs)	78.202	50.397	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continued to support Government Ground Testing (GGT) Supported planning, integration, and analysis of the Foreign Exercise Provided mission support during contingency operations at PMRF</p> <p>** This constitutes the ;Ballistic Missile Defense System (BMDS) Integrated Build C capability associated with Improved THAAD Discrimination</p> <p><i>FY 2010 Plans:</i> Continue to support the flight test program at Pacific Missile Range Facility (PMRF) Support transition of flight test program to Reagan Test Site (RTS) Continued to maintain Formal Release of Software Build 4.2.4 Complete Government Ground Testing Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in the Foreign Exercise</p> <p><i>FY 2011 Base Plans:</i> All AN/TPY-2 Radar activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>System Test See Description Below</p> <p><i>FY 2009 Accomplishments:</i> THAAD System Test is responsible for developing and executing all aspects of the THAAD program flight test objectives, ballistic interceptor target solutions, Live Fire Test and Evaluation (LFT&E)</p>		152.143	92.821	0.000	0.000	0.000

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>program, system flight test execution, Government Ground Test (GGT), range facility preparations, documentation requirements, data analysis and reporting.</p> <p>Continued flight test planning and analysis, range interface, coordination with Operational Test Agencies (OTAs), flight test operations, post-flight test analysis and reporting, data distribution and data storage at Pacific Missile Range Facility (PMRF)</p> <p>Initiated flight test planning and analysis, range interface, coordination with OTAs, flight test operations, post-flight test analysis and reporting, data distribution and data storage at Reagan Test Site (RTS)</p> <p>Initiated planning and design of next generation Launch & Test Support Equipment</p> <p>Assessed proposed target solutions for flight test program</p> <p>Monitored targets design, development, delivery, and execution to support flight test program</p> <p>Continued Electromagnetic Environmental Effects (E3) Interceptor and Launcher Design Verification Test (DVT)/Government Ground Testing (GGT)</p> <p>Continued GGT with missile drop testing and missile E3 Ground Testing</p> <p>Initiated THAAD Fire Control/Communication (TFCC) Electromagnetic Ground testing</p> <p>Completed TFCC, Launcher, Radar, and Battery Support Center (BSC) Mobility Performance and Automotive Safety Government Ground Testing (GGT)</p> <p>Initiated System Level Natural Environments GGT with TFCC, Launcher, Radar, and BSC at Eglin Air Force Base, FL</p> <p>Continued Insensitive Munitions/Final Hazard Classification (IM/FHC) testing</p> <p>Continued GGT data management, distribution, and archival/storage</p> <p>Continued support of the Ballistic Missile Defense System (BMDS) flight testing program</p> <p>Continued planning for the Foreign Exercise</p> <p>Provided data management, facilities operations, and post test analysis and reporting support in support of BMDS System Tests</p> <p>Continued Live Fire Test & Evaluation (LFT&E) Program and initiated Light Gas Gun (LGG) Developmental Testing</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continued detailed Operational Test planning for Force Development Experiment (FDE) and Limited User Test (LUT) Provided mission support during contingency operations at Pacific Missile Range Facility (PMRF)</p> <p><i>FY 2010 Plans:</i> ** Complete flight test planning and analysis, range interface, coordination with Operational Test Agencies (OTAs), flight test operations, post-flight test analysis and reporting, data distribution and data storage at Pacific Missile Range Facility (PMRF) Complete transition and continue flight test planning and analysis, range interface, coordination with OTAs, flight test operations, post-flight test analysis and reporting, data distribution and data storage at Reagan Test Site (RTS) Continue planning and design of next generation Launch & Test Support Equipment Assess proposed target solutions for flight test program Monitor targets design, development, delivery, and execution to support flight test program Collect and support analysis of Empirical Measurement Events (EME) and Critical Engagement Conditions (CEC)*** data during flight testing Continue Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing Complete execution of Government Ground Test (GGT) Initiate planning of GGT Cold Region Demonstration Continue GGT data management, distribution, and archival/storage Provide data management, facilities operations, and post test analysis and reporting support in support of BMDS System Tests Support THAAD participation in the Foreign Exercise Complete Live Fire Test & Evaluation (LFT&E) Program and Light Gas Gun (LGG) Developmental Testing Conduct Force Development Experimentation (FDE) and Limited User Test (LUT) Support development of Operation Support Report</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>** THAAD will demonstrate Multi-Target Engagement capability using Simulation-Over-Live-Driver (SOLD) and an intercept test against multiple targets</p> <p>*** CEC/EMEs are the conditions and events where data is obtained from flight and ground test in order to anchor models and simulations</p> <p><i>FY 2011 Base Plans:</i> All System Test activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Weapon Sys Engr & Integ Team (WSEIT)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> WSEIT is responsible for all engineering efforts required to translate approved Ballistic Missile Defense System (BMDS) capabilities and requirements into operationally suitable THAAD capability; coordinating and conducting implementation of the Unifying Missile Defense Function (UMDF), requirements analysis, system integration and verification, software engineering to include independent verification and validation, configuration management, and BMDS integration for each THAAD component by working through the Integrated Product Team (IPT) process on a balanced contractor-government team. Additionally, THAAD WSEIT is responsible for all aspects of risk management system security and information assurance for the THAAD program.</p> <p>Continued to support the flight test program at Pacific Missile Range Facility (PMRF) Conducted pre-flight testing in the System Integration Laboratory (SIL) Hardware-in-the Loop (HWIL) facility</p>		64.837	55.442	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>Conducted successful intercept of a threat-representative target at FTT-10A, a designated OTA salvo test. This test allowed MDA to collect data on EME-09, RV dynamics, and CEC-20, salvo with closely spaced intercepts. This data provided verification of the performance of the actual THAAD interceptor against the expected performance of the THAAD models for future certification of the models.</p> <p>Continued System Analysis and Mission Planning in support of flight testing</p> <p>Continued integration and implementation support of THAAD and its components in the BMDS through participation in MDA Ground Test Campaign and Combatant Commander (COCOM) war games, and exercises, and Performance Assessments</p> <p>Continued development of Simulation-Over-Live Driver (SOLD)</p> <p>Provided mission support during contingency operations at PMRF</p> <p>Provided mission support planning, integration, analysis and execution of the Foreign Exercise</p> <p>Provided support to Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing</p> <p>Participated in a System/Subsystem Review for the BMDS Integrated Build D Requirements</p> <p>Developed THAAD Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) for tests to support Integrated Master Test Plan development ***</p> <p>Provided support for transition of flight test operations from PMRF to Reagan Test Site (RTS)</p> <p>Completed ISP, Link 16, and United States Message Text Format (USMTF) Interoperability Milestones, begin Interoperability Certification testing, draft Networkiness Certification documentation, complete COMSEC supportability statement, conduct Maintainability Demo, and complete Software Suitability procedure/checklist</p> <p>Initiated long lead verification tasks associated with current contract completion</p> <p>Supported Materiel Release conferences for THAAD Batteries #1 and 2 Fielding</p> <p>*** CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations</p> <p><i>FY 2010 Plans:</i> Continue to support the flight test program</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>Conduct pre-flight testing in the System Integration Laboratory (SIL) Hardware-in-the Loop (HWIL) facility</p> <p>Continue System Analysis and mission planning in support of flight testing</p> <p>Initiate Element Verification in support of Baseline Capability Completion</p> <p>Continue integration and implementation of THAAD and its components in the BMDS through participation in Missile Defense Agency (MDA) Ground Test Campaign and Combatant Commander (COCOM) war games, and exercises, and Performance Assessments</p> <p>*Continue the development and integration of Simulation-Over-Live Driver (SOLD) into the flight test program and Ballistic Missile Defense System (BMDS) ground test campaign to include the Radio Frequency Scene Generator (RFSG)</p> <p>Continue to support Insensitive Munitions/Final Hazard Classification (IM/FHC) design and testing</p> <p>Continue to support the transition of flight test operations from PMRF to Reagan Test Site (RTS)</p> <p>Continue the development of THAAD Ballistic Missile Defense System (BMDS) Unifying Missile Defense Functions (UMDF) through demonstrations of the THAAD Prototype Planner, initial demonstration of communications upgrades and interoperability opportunities at both flight and ground exercises</p> <p>Participate in the BMDS System/Subsystem Requirements Review in support of the BMDS integrated Build D ;Specification and associated System Interface Documents</p> <p>Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in the Foreign Exercise</p> <p>Conduct engineering, integration, and coordination activities in support of development of suitability statements for THAAD Materiel Release</p> <p>Provide component support in the transition and transfer to the Army</p> <p>Initiate the design and development of the concurrent test training operations</p> <p>Initiate the planning for software requirements development and reviews, preliminary design reviews for the Post Deployment Software (PDS) builds for each THAAD component</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>* Simulation-Over-Live Driver (SOLD) is an enabling activity to demonstrate THAAD`s Multi-Target Engagement capability on FTT-11 and FTT-12 (THAAD Intercept Flight Tests)</p> <p><i>FY 2011 Base Plans:</i> All WSEIT activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Interceptor See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The THAAD Interceptor is a certified round that is propelled by a single-stage, solid-propellant rocket booster. The kill vehicle (KV) possesses a Divert and Attitude Control System (DACs) and an infrared Seeker used to destroy its target through hit-to-kill technology.</p> <p>Continued production and delivery of interceptors to support ground and flight testing Continued successful interceptor ground test program to verify missile requirements and support Materiel Release Review Board (MRRB) data requirements Performed interceptor safety tests Supported Insensitive Munitions/Final Hazard Classification (IM/FHC) testing Initiated stockpile reliability test program Continued flight test activities to include performance risk assessment, Hardware-in-the-Loop (HWIL) preflight analysis, onsite flight support and post flight analysis Delivered Interceptor for cold conditioning in support of first salvo mission Continued assembly qualification and delta qualification test activities Initiated Battery Interceptor production assembly</p>		53.014	56.513	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>Continued Flight Sequencing Assembly (FSA) design changes to support Ignition System Safety Review Board (ISSRB) requirement (integration of optical block)</p> <p>Initiated planning and contract actions to buy additional FSA`s to be Military Standard, Fuze and Fuze Components, Environmental and Performance Tests (MIL-STD-331C) compliant</p> <p>Maintained formal release of interceptor software and improved interceptor software algorithms and enhanced the performance and capabilities of the missile based on flight test results in preparation for formal release</p> <p>Performed technical risk analysis for 21`` Boost Motor Business Case Analysis (BCA) study</p> <p>Supplied interceptors as needed to support Pacific Missile Range Facility (PMRF) tactical readiness requirements</p> <p>Supported BMDS forward flight test planning evaluation study to establish interceptor Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs)***</p> <p>Provided mission support during contingency operations at Pacific Missile Range Facility (PMRF)</p> <p>Initiated development of the Missile Stockpile Test Set (STS)</p> <p>Initiated Battery obsolescence efforts</p> <p>*** CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations</p> <p><i>FY 2010 Plans:</i></p> <p>Continue production and delivery of interceptors to support upcoming ground and flight testing</p> <p>Continue ground testing and interceptor safety tests</p> <p>Continue to support Insensitive Munitions/Final Hazard Classification (IM/FHC) testing</p> <p>Continue stockpile reliability test program</p> <p>Continue to support flight test program</p> <p>Inspect and refurbish Flight Test STS Vehicles and install Range Safety Instrumentation System (RSIS) components to support flight tests</p> <p>Continue interceptor and delta qualification</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>Continue support Battery Interceptor production assembly Complete FSA design changes Support post deployment software development Support planning and execution of Ballistic Missile Defense System (BMDS) Integration tests to ensure missile performance optimizes overall BMDS performance Evaluate missile performance against real world scenarios and potential threats Coordinate and resolve performance shortfalls discovered during ground test program leading up to materiel release Perform assembly design changes and conduct re-qualification testing Initiate procurement of Flight Sequencing Assembly (FSA) to conduct required Ignition System Safety Review Board (SSRB) testing of optical block design Initiate development and fabrication of test instrumentation kits to support BMDS flight tests Continued development of the Missile Stockpile Test Set Prepared documentation/reports for government approval and submission to Materiel Release Review Board Refurbish 2 BQT interceptors and support government ground safety tests Initiate procurement of additional Range Safety Instrumentation Safety (RSIS) kits Continue Batteries #1 and #2 ;obsolescence efforts</p> <p><i>FY 2011 Base Plans:</i> All Interceptor activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Integrated Logistics Support (ILS) See Description Below		48.154	22.108	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></p> <p>Provides each THAAD component with all aspects of logistics support. Responsible for transportability of all THAAD system equipment and ensuring the required Government Furnished Equipment (GFE) is available as required by contract. Additionally, works with the user in developing all aspects of training for the components and has a key role in the fielding of the THAAD System to the Army.</p> <p>Initiated the THAAD Depot Maintenance Study to identify reparable items and facilities/tools required for Depot Maintenance</p> <p>Completed Logistics and Supply Support Demonstrations for the Launcher component; demonstrate fault isolation/fault detection capabilities</p> <p>Continued support of Government Ground Test</p> <p>Continued update of Performance Based Logistics (PBL) strategy and supportability concept in conjunction with the Army</p> <p>Integrated Tactical Active Leak Sensor System (TALSS) 8 channel missile monitoring capability to support highway and air transport capability for OCONUS deployment</p> <p>Conducted THAAD Battery Support Center (BSC) Government Ground Test Program, Mobility, Electromagnetic Environment Effects (E3), and Environmental testing</p> <p>Completed Single Missile Round Transportation Container (SMRTC) and TALSS prototypes</p> <p>Completed THAAD New Equipment Training (NET), Tactical Operations Course and Collective Training for Battery # 1</p> <p>Completed Practical and Classroom Explosive Ordnance Disposal Trainers (1 of each) to EOD School, Eglin AFB</p> <p>Completed THAAD BSCs for New Equipment Training (NET) and Battery #1 Collective Training</p> <p>Completed THAAD Interim Contractor Support System (ICSS) for Battery #1</p> <p>Coordinated and conduct transportation operations for THAAD Flight Test Interceptors, Ground Components, and Simulation-Over-Live-Driver (SOLD) hardware</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>Coordinate/provide Logistics documentation for Type Classification (TC)/Materiel Released Review Board (MRRB)</p> <p>Provided Unit-assigned Training SME</p> <p>Initiated effort for TFCC, Launcher and Radar Software Users Guides</p> <p>Provided Training Base Subject Matter Expert (SME) and Unit-assigned SME</p> <p>Published Technical Manual 60 in support of Explosive Ordnance Disposal requirements</p> <p>Prepared and published the Final Draft Materiel Fielding Plan with Draft Materiel Fielding Agreement</p> <p>Performed THAAD Logistics Automated Information System tool selection trade study</p> <p>Established THAAD Integrated Logistic Support (ILS) 24 hours a day maintenance and supply operations center</p> <p>Awarded THAAD Field Support Contract for Batteries #1 & #2</p> <p>Supported Government Ground Test activities at Aberdeen Proving Ground, Redstone Test and Technical Center and Eglin AFB</p> <p>Provided Contractor Logistic Support for Operation Dynamic Spring, Dynamic Summer and Caravan 2 exercises</p> <p>Updated the Supportability Strategy</p> <p>Initiated transportability CONOPS for shipment of Single Missile Round Transportation Container via Single Missile Round Transport Trailer</p> <p>Provided mission support during contingency operations at Pacific Missile Range Facility</p> <p>Completed the fabrication and assembly of Missile Round Trainer</p> <p>Continued the procurement of Common Support Equipment</p> <p>Completed fielding of Battery #1 to US Army 11th Brigade, Alpha Battery 4th Air Defense Regiment</p> <p>Initiated the Battery Support Center (BSC) government ground test program mobility and natural environments testing</p> <p>Completed BSC #1</p> <p>Continued development of Interactive Electronic Technical Manual</p> <p>Development of Special packaging and instruction (SPI)</p> <p>Completed Maintainability demonstrations for all ground components</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 2010 Plans:</i></p> <ul style="list-style-type: none"> Initiate a Performance Based Logistics (PBL) strategy working in conjunction with the Army Coordinate/provide Logistics documentation for Type Classification (TC) and Materiel Release Board (MRRB) Update Logistics products (Logistics Management Information (LMI), Spares, etc.) required for Sustainment Strategy Procure Missile Handling Equipment (Side Lift Forklift) to support ingress and egress operations for bunker storage at Anniston Munitions Center (ANMC) Perform THAAD missile round Stockpile to Target pathfinder mission Update/maintain training materials and courseware as a result of Lessons Learned from Collective Training, Force Development Experimentation and Limited User Test Conduct New Equipment Training for Battery #2 Initiate effort for TFCC Netted Embedded Training Complete Missile Round Trainers (24) for Battery #2 Continue THAAD Integrated Logistics Support (ILS) 24 hour maintenance and supply operations center Finalize and distribute the Final Materiel Fielding Plan, Materiel Fielding Agreement and Materiel Requirements List for Battery # 2 Finalize the Depot Maintenance Study to identify reparable items and facilities/tools required for Depot Maintenance Perform a Level of Repair Analysis (LORA) Continue to coordinate and conduct transportation operations for THAAD Flight Test Interceptors, Ground Components, and Simulation-Over-Live-Driver (SOLD) hardware Participate in Force Development Experimentation (FDE) and Limited User Test (LUT) Update the Unique Identification (UID) Plan; commence Unique Item Identifier marking; update the UID Registry Publish Demilitarization/Disposal Plan 					

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Select Product Support Integrator; identify Product Support Providers; develop and publish Performance Based Agreements (PBAs) Conduct Type 2 Business Case Analysis (BCA) for Field Level Maintenance working in conjunction with DA to define supportability concept Initiate Core Logistics Assessment and Core Depot Assessment/Source of Repair Analysis Continue transportability CONOPS for shipment of Single Missile Round Transportation Container (SMRTC) via Single Missile Round Transport Trailer (SMRTT) Continue planning and execution for the reception of Missile Rounds at depot for storage Continue the Battery Support Cost (BSC) government ground test program mobility and natural environmental testing Initiated the BSC Government ground test program Electromagnetic Environmental Effects (E3) testing Complete ;8 SMRTCs Complete 1 Missile Transport Trailer (MTT) Complete 4 Single Missile Round Transport Trailers (SMRTTs) Complete ;5 Tactical Active Leak Sensor Systems Complete Battery #2 ground component hardware integration Continue Fix or Fight documentation Continue cataloging activities Create Depot Maintenance Support Plan Complete Missile Supply Bulletin Continue development of Interactive Technical Manual Conversion of IETM to Mil-STD compliance Continue development of Special packaging and instruction (SPI)</p> <p><i>FY 2011 Base Plans:</i> All ILS activities transition to project MD07 in FY 2011</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) See Description Below <i>FY 2009 Accomplishments:</i> The THAAD Fire Control and Communication (TFCC) is composed of two Tactical Station Groups (TSGs). Each TSG consists of a Tactical Operations Station, a Launch Control Station, and a Station Support Group. The TFCC supports the Ballistic Missile Defense System (BMDS) Unifying Missile Defense Functions (UMDFs) and planning, control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with external air and interceptor defense and intelligence systems and agencies integrated into the BMDS. Delivered 1 THAAD Fire Control and Communications (TFCC) Tactical Station Group (TSG) for Collective Training Conducted Voice/Data Joint Interoperability Test Certification (JITC) on tactical test beds Completed Development Verification Testing (natural environmental testing) to verify that the design meets fielding requirements ** Developed, delivered, and maintained Software Build 5.1.5 for flight tests and Collective Training Conducted development, and formal qualification of Software Build 5.2, featuring Solaris 10 and Information Assurance for the Foreign Exercise, Flight Testing, and Fielding Conducted TEMPEST testing in support of fielding Defined Link 16 requirements for Joint Tactical Data Link Message Interface Standard (MIL-STD-6016D) to maintain JITC certification, approved Interface Change Proposals (ICPs) and new BMDS requirements		23.952	24.570	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>Provided mission support during contingency operations at Pacific Missile Range Facility (PMRF) Continued Government Ground Test including completing Mobility Acceleration, Shock and Vibe Testing, and initiating Electromagnetic Environmental Effects (E3) and Natural Environments Testing Supported TFCC Maintainability Demonstration</p> <p>** This constitutes the BMDS Integrated Build C capability associated with Message-Based Regional Engagement Direction</p> <p><i>FY 2010 Plans:</i> Delivered the Formal Release of TFCC Software Build 5.2 Maintain TFCC Software build 5.2 featuring Solaris 10 and Information Assurance for the Foreign Exercise, Flight Test, and Fielding Conducted Service Level (Army) Certification Test Conduct additional TEMPEST Testing to address Information Assurance Vulnerabilities identified during FY 2009 TEMPEST Testing Complete Government Ground Test including completion of Natural Environments Testing and E3 Testing Coordinate and verify implementation of software updates in preparation for Ballistic Missile Defense System (BMDS) tests, exercises and fielding Complete Army Interoperability Certification Testing Ensure Compliance with Information Assurance requirements, and conduct Joint Interoperability Certification Testing Prototype design and begin implementation of the Link 16 requirements for MIL-STD-6016D to maintain Joint Interoperability Test Certification (JITC) Certification and approved ICPs Conduct Fire Control Obsolescence Assessment to determine sustainability requirements for fielded TSGs and future Batteries Conduct the refurbishment of 1 Tactical Station Group (test asset) following the completion of Government Ground Testing</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>Provide technical support to fielding of THAAD Battery #1 to the Army at Force Development Experimentation (FDE) and Limited User Test (LUT) and THAAD participation in the Foreign Exercise Begin implementation of the Fire Control Obsolescence resolution for hardware, software and GFI (Common Message Processor (CMP), Common User Interface (CUI), Common Data Link Interface Module (CDLIM) for future Batteries</p> <p>Conduct and begin implementation of Post Deployment Software Support (PDSS) Planning and Analysis to incorporate THAAD Fire Control and Communication (TFCC) soldier capabilities, approved Link-16 interface change proposals/MIL-STD-6016D extracts, prioritized/partnered Change Requests, and correlation Interoperability improvements into the first PDSS Engineering Build</p> <p>Upgrade the TFCC development environments to Solaris 10 and TFCC SW Build 5.2</p> <p>Supported the Integrated Operational Capability Demonstration</p> <p><i>FY 2011 Base Plans:</i> All TFCC activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Launcher</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The THAAD Launcher consists of a U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated missile round pallet and supports and secures eight ready-to-launch interceptors.</p> <p>Delivered two Launchers and Mechanical Prototype for Collective Training Delivered one Launcher for Battery #1</p>		18.069	7.715	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>Supported System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) integration activities of hardware and software</p> <p>Continued Support flight testing at Pacific Missile Range Facility (PMRF)</p> <p>Continued Carrier Electronics Module (CEM) Qualification Testing</p> <p>Completed Software Build 4.02.02 to support maintainability demonstration</p> <p>Initiated Concurrent Missile/Launcher Electromagnetic Environmental Effect (E3) Government Ground Testing</p> <p>Completed Launcher Mobility Ground Testing</p> <p>Initiated Launcher Environmental Government Ground Testing</p> <p>Provided mission support during contingency operations at PMRF</p> <p><i>FY 2010 Plans:</i></p> <p>Complete Carrier Electronics Module (CEM) Qualification Testing</p> <p>Continue to support the flight test program at PMRF</p> <p>Continue to support System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) integration activities of hardware and software in preparation of flight test</p> <p>Complete Concurrent Missile/Launcher Electromagnetic Environmental Effects (E3) Government Ground Testing</p> <p>Complete Launcher Mobility Government Ground Testing</p> <p>Provide technical support to testing of THAAD Battery #1 by the Army during Force Development Experimentation (FDE) and Limited User Test (LUT)</p> <p>Complete Software Build 4.02 update to support Force Development Experimentation (FDE) and Limited User Test (LUT)</p> <p>Complete Launcher obsolescence redesign</p> <p><i>FY 2011 Base Plans:</i></p> <p>All Launcher activities transition to project MD07 in FY 2011</p>						

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Program Management See Description Below <i>FY 2009 Accomplishments:</i> Program Management provides support functions across the program such as strategic planning, program integration, cost estimating, contracting, and financial management which includes preparation of financial statements, reimbursement of financial services provided by Defense Finance Accounting Service (DFAS), internal review and audit, earned-value management, and program assessments. ;Additionally, THAAD program Management is responsible for all aspects of risk management for the THAAD program. Provided additional management, leadership, and planning for all BCD activities Provided additional salaries, travel, training, and supplies Continued to provide project-wide programmatic support Provided programmatic support during contingency operations at Pacific Missile Range Facility (PMRF) <i>FY 2010 Plans:</i> Provide management, leadership, and planning for all BCD activities Provide salaries, travel, training, and supplies Continue to provide project-wide programmatic support <i>FY 2011 Base Plans:</i> All Program Management activities transition to project MD07 in FY 2011		47.339	19.344	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
<i>FY 2011 OCO Plans:</i> NA						
Common Threat See Description Below <i>FY 2009 Accomplishments:</i> Threat Systems Engineering supports the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process. The Threat Systems Engineering uses intelligence community data to define the BMDS threat space and directly supports the development of the BMD System Description Document and System and Element Specifications. This threat space is documented in the Adversary Data Packages (ADP), which includes common and consistent representation of Missile Systems and countermeasures to drive BMDS requirements, designs, and directly supports the execution of Integrated Master Test Plan (IMTP) (i.e. flight test targets, ground tests & digital simulations, and pre-mission analysis). Threat Systems Engineering also develops scenarios (trajectory and signature) for system and element utilization for compliance and assessment evaluations of BMDS capability to defend homeland, deployed forces, and friends and allies. Developed an agency-wide Common Threat baseline in support of BMDS design, verification, and assessment Completed the BMDS Integrated Build D ADP update to document adversary missile capabilities and characterizations consistent with projected threat environment for the BMDS Produce all the threat definition and scenario data required to support the BMDS Integrated Master Test Plan, including several Flight Tests Ground Test BMDS Ground Test 03 (GT-03), BMDS Performance Assessment 09 (PA-09), FY 2009 war games and exercises ;and the implementation of Improved BMDS discrimination		2.467	1.185	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>Produced scenario data to support Element and Component design and assessment for BMDS Integrated Build D, Aegis BMD 5.1, and Far Term Sea-based Terminal</p> <p>Developed threat data for special projects</p> <p>Validated that BMDS test targets are threat representative (FTM-15, FTG-06, FTT-10a)</p> <p><i>FY 2010 Plans:</i></p> <p>Maintain and update the agency-wide Common and consistent BMDS threat</p> <p>Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for BMDS Builds</p> <p>Produce all the threat definition and scenario data required to support the BMDS Integrated Master Test Plan, including several Flight Tests Ground Test (GTX-04b, GTX-04c), BMDS Performance Assessment 2009 (PA-09) Technical Assessment 2010 (TA-10), and FY 2010 war games and exercises</p> <p>Produce scenario data to support Element and Component analysis of alternatives, requirements development, design and assessment for BMDS Integrated Build D updates and all phases of the Phased Adaptive Approach (PAA) including: THAAD, Precision Tracking Space System (PTSS), Air-Borne Infra-Red (ABIR), Aegis BMD Ashore, Aegis BMD 5.1, Far Term Sea-based Terminal, Early Intercept, TPY-2, and C2BMC. Space Tracking and Surveillance System (STSS).</p> <p>Develop threat data for special projects</p> <p>Validate BMDS test targets are threat representative (JFTM-03, FTG-06, FTT-11, FTT-12)</p> <p><i>FY 2011 Base Plans:</i></p> <p>N/A</p> <p><i>FY 2011 OCO Plans:</i></p> <p>NA</p>						
Modeling and Simulations - TH Block 2.0 Development-Hardware-in-the-loop (HWIL)		0.000	34.145	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)																	
<table border="1"> <thead> <tr> <th></th> <th>FY 2009</th> <th>FY 2010</th> <th>FY 2011 Base</th> <th>FY 2011 OCO</th> <th>FY 2011 Total</th> </tr> </thead> <tbody> <tr> <td> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> The THAAD element will support the BMDS Hardware-in-the-Loop (HWIL) Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs. BMDS HWIL provides development, integration, and test funding to both MDA and non-MDA Elements participating in the BMDS ground test campaigns. BMDS HWIL also provides the core Lethality and Phenomenology models for use in analysis and BMDS and Element mission requirements. BMDS HWIL additionally maintains the Advanced Research Center and Simulation Center High Performance Computing Capabilities to support test and Modeling and Simulation (M&S) requirements across MDA.</p> <p>Continue to develop, integrate, and test a common Ballistic Missile Defense (BMDS) HWIL stimulation framework with the Elements for the GTI-04, GTD-04 ground tests Conduct BMDS HWIL stimulation framework Verification and Validation (V&V) for BMDS GTI-04 and GTD-04 ground tests Define and plan for enhancement to the Single Stimulation Framework (SSF) required for execution of the GT-05 campaign to include identification of interdependencies required for execution Provide development, Operations and Maintenance, and Independent V&V of standardized phenomenology and lethality tools and models for the common environmental toolset Provide support to integrate common Radar Digital Signal Injection System (RDSIS) for X-Band radars. Evolve and enhance the SSF to provide increased Warfighter support, specifically Training and Exercises</p> </td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	<p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> The THAAD element will support the BMDS Hardware-in-the-Loop (HWIL) Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs. BMDS HWIL provides development, integration, and test funding to both MDA and non-MDA Elements participating in the BMDS ground test campaigns. BMDS HWIL also provides the core Lethality and Phenomenology models for use in analysis and BMDS and Element mission requirements. BMDS HWIL additionally maintains the Advanced Research Center and Simulation Center High Performance Computing Capabilities to support test and Modeling and Simulation (M&S) requirements across MDA.</p> <p>Continue to develop, integrate, and test a common Ballistic Missile Defense (BMDS) HWIL stimulation framework with the Elements for the GTI-04, GTD-04 ground tests Conduct BMDS HWIL stimulation framework Verification and Validation (V&V) for BMDS GTI-04 and GTD-04 ground tests Define and plan for enhancement to the Single Stimulation Framework (SSF) required for execution of the GT-05 campaign to include identification of interdependencies required for execution Provide development, Operations and Maintenance, and Independent V&V of standardized phenomenology and lethality tools and models for the common environmental toolset Provide support to integrate common Radar Digital Signal Injection System (RDSIS) for X-Band radars. Evolve and enhance the SSF to provide increased Warfighter support, specifically Training and Exercises</p>					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total												
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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Integrate the SSF with additional Allied/Coalition elements to expand Distributed Ground Test and Exercise venues</p> <p>Initiate the technical integration of the SSF with the Digital Stimulation Architecture</p> <p>Product Line development, sustainment, maintenance and product support for HWIL products</p> <p>Plan, develop, integrate and test a common Ballistic Missile Defense System (BMDS) Hardware-in-the-Loop (HWIL) stimulation framework with the Elements for the GTX, GTI, GTD ground tests, Active Layered Theatre Ballistic Missile Defense (ALTBMD) exercises, Assured Response (AR) exercises, Foreign Exercises, Near-Term Discrimination (NTD) excursions tests, and Concurrent Test, Training, and Operations (CTTO) demos</p> <p>Conduct BMDS HWIL stimulation framework V&V for BMDS GTX, GTI, GTD ground tests, ALTBMD exercises, Assured Response (AR) exercises, Foreign Exercises, and Concurrent Test, Training and Operations (CTTO) demos</p> <p>Provide systems engineering support to upgrade the BMDS stimulation framework to support wideband debris for BMDS sensors</p> <p>Initiate integration of the BMDS stimulation framework with the additional sensors; provide common threat representations and scenarios to meet specific event and customer requirements for BMDS HWIL Framework</p> <p><i>FY 2011 Base Plans:</i> All Models and Simulations activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
MDA Infrastructure See Description Below		47.163	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> Provided Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Continued to provide dedicated Information Technology service for mission specific research and test efforts to include classified and unclassified networks</p> <p><i>FY 2010 Plans:</i> N/A</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	728.934	552.113	0.000	0.000	0.000

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
• 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
• 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
	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869

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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>
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722

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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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense</i> <i>(THAAD) Block 2.0</i>
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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>
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>											
• 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
• 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

The THAAD Baseline Capability Development (THAAD 1.0) program is a Sole Source Cost Plus Award Fee (CPAF) contract awarded August 4, 2000. The Batteries #1 and #2 contract is a Sole Source, CPAF/Cost Plus Incentive Fee (CPIF) contract awarded on December 22, 2006 to procure Interceptors, Launchers, THAAD Fire Control and Communication and Peculiar Support Equipment hardware.

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>

The MDA and THAAD Baseline Capability Development Hardware-in-the-Loop (HWIL) program utilizes competitively awarded CPAF/CPIF service and product development contracts. The Army's Research, Development, and Engineering Center (RDEC) Echelon 3 Engineering Activity provides direct Systems Engineering support and contractor oversight.

E. Performance Metrics

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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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			
Batteries #1 and #2 Lockheed Martin 9 BX07	SS/CPIF	LMSSC Sunnyvale, CA & Huntsville, AL; NM & HI	382.594	187.873		0.000		0.000		0.000	0	570.467	570.467
Batteries #1 and #2 Raytheon BX07	SS/CPIF	Raytheon Wolburn, MA; Huntsville, AL	56.000	0.000		0.000		0.000		0.000	0	56.000	56.000
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar Lockheed Martin 5 BX07	SS/CPAF	Raytheon Bedford, MA	222.002	50.397		0.000		0.000		0.000	0	272.399	272.399
System Test Lockheed Martin 7 BX07	SS/CPAF	LMSSC Sunnyvale, CA; Huntsville, AL; NM & HI	155.320	17.395		0.000		0.000		0.000	0	172.715	172.715
Weapon Sys Engr & Integ Team (WSEIT) Lockheed Martin 8 BX07	SS/CPAF	LMSSC Sunnyvale, CA & Huntsville, AL	55.032	13.980		0.000		0.000		0.000	0	69.012	69.012
Interceptor Lockheed Martin 4 BX07	SS/CPAF	LMSSC CA, TX, AL, MA, NH, IL, FL & MD	116.503	47.308		0.000		0.000		0.000	0	163.811	163.811
Integrated Logistics Support (ILS) Lockheed Martin 2 BX07	SS/CPAF	LMSSC Huntsville, AL	60.055	6.340		0.000		0.000		0.000	0	66.395	66.395
THAAD Fire Control and Communication (TFCC)	SS/CPAF	LMSSC and Raytheon	44.458	13.006		0.000		0.000		0.000	0	57.464	57.464

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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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			
Tactical Station Groups (TSGs) Lockheed Martin 3 BX07		Huntsville, AL											
Launcher Lockheed Martin 6 BX07	SS/CPAF	LMSSC Huntsville, AL, Camden, AK, Dallas & Lufkin, TX	17.209	4.064		0.000		0.000		0.000	0	21.273	21.273
Program Management Lockheed Martin 1 BX07	SS/CPAF	LMSSC/ Sunnyvale, CA Huntsville, AL	47.356	10.079		0.000		0.000		0.000	0	57.435	57.435
Common Threat - BX07	Various/ Various	-	2.467	1.185		0.000		0.000		0.000	0	3.652	3.652
Modeling and Simulations - TH Block 2.0 Development- Hardware-in-the-loop (HWIL) Teledyne Brown Eng BX07	Various/ Various	Teledyne Solutions Huntsville, AL	0.000	34.145		0.000		0.000		0.000	0	34.145	34.145
MDA Infrastructure - BX07	Various/ Various	-	47.163	0.000		0.000		0.000		0.000	0	47.163	47.163
Subtotal			1,206.159	385.772		0.000		0.000		0.000	0.000	1,591.931	1,591.931

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</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			
Batteries #1 and #2 GFE 15 BX07	TBD/TBD	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC Ft. Monmouth, NJ; Warren, MI & Huntsville, AL	1.945	0.000		0.000		0.000		0.000	0	1.945	1.945
Batteries #1 and #2 CSE 15 BX07	TBD/TBD	Multiple to include CECOM, TACOM, & GSA Ft. Monmouth, NJ; Warren, MI & Huntsville, AL	0.000	0.000		0.000		0.000		0.000	0	0	0
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar CSS 11 BX07	C/CPFF	Multiple to include Dynetics & GA Tech Huntsville, AL & GA	2.367	0.000		0.000		0.000		0.000	0	2.367	2.367
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar OGA 11 BX07	TBD/TBD	Multiple to include CECOM, RDEC, & SMDC Ft. Monmouth, NJ & Huntsville, AL	1.598	0.000		0.000		0.000		0.000	0	1.598	1.598
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar MDA Program Support 11 BX07	Various/ Various	MDA Arlington, VA	1.420	0.000		0.000		0.000		0.000	0	1.420	1.420

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</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			
System Test Contract Support Services (CSS) 13 BX07	C/CPFF	Multiple to include Dynetics, L3 & TSI Huntsville, AL	34.087	18.854		0.000		0.000		0.000	0	52.941	52.941
System Test OGA 13 BX07	TBD/TBD	Multiple to include WSMR, PMRF, ATEC, RDEC & SMDC NM, HI, VA & Huntsville, AL	118.920	55.516		0.000		0.000		0.000	0	174.436	175.960
System Test MDA Program Support 13 BX07	Various/ Various	MDA Arlington, VA	25.610	1.056		0.000		0.000		0.000	0	26.666	26.666
Weapon Sys Engr & Integ Team (WSEIT) Contract Support Services (CSS) 14 BX07	C/CPFF	Multiple to include Dynetics, TSA & L3 Huntsville, AL & Salt Lake City, UT	23.586	7.454		0.000		0.000		0.000	0	31.040	31.040
Weapon Sys Engr & Integ Team (WSEIT) OGA 14 BX07	TBD/TBD	Multiple to include RDEC & SMDC Huntsville, AL	24.339	14.642		0.000		0.000		0.000	0	38.981	38.981
Weapon Sys Engr & Integ Team (WSEIT) MDA Program Support 14 BX07	Various/ Various	MDA Arlington, VA	20.093	19.366		0.000		0.000		0.000	0	39.459	40.982
Interceptor CSS 10 BX07	C/CPFF	Multiple to include BAE, TSI & L3	11.627	5.959		0.000		0.000		0.000	0	17.586	17.586

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</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			
		Huntsville, AL & Salt Lake City, UT											
Interceptor OGA 10 BX07	TBD/TBD	Multiple to include RDEC & SMDC Huntsville, AL	7.489	3.246		0.000		0.000		0.000	0	10.735	10.735
Interceptor MDA Program Support 10 BX07	Various/ Various	MDA Arlington, VA	7.263	0.000		0.000		0.000		0.000	0	7.263	7.263
Integrated Logistics Support (ILS) CSS 8 BX07	C/CPFF	Multiple to include Dynetics, TSA & BAE Huntsville, AL & Rockville, MD	11.531	8.534		0.000		0.000		0.000	0	20.065	20.065
Integrated Logistics Support (ILS) OGA 8 BX07	TBD/TBD	Multiple to include IMMC & USAADASCH Huntsville, AL & Ft. Bliss	9.328	7.234		0.000		0.000		0.000	0	16.562	16.562
Integrated Logistics Support (ILS) MDA Program Support 8 BX07	C/CPFF	MDA Arlington, VA	4.570	0.000		0.000		0.000		0.000	0	4.570	4.570
Integrated Logistics Support (ILS) GFE 8 BX07	TBD/TBD	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC	1.847	0.000		0.000		0.000		0.000	0	1.847	1.847

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

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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			
		Ft. Monmouth, NJ; Warren, MI & Huntsville, AL											
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) Contract Support Services (CSS) 9 BX07	C/CPFF	Multiple to include Dynetics, DCD & Davidson Tech Silver Spring, MD & Huntsville, AL	1.950	1.442		0.000		0.000		0.000	0	3.392	3.392
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) OGA 9 BX07	TBD/TBD	Multiple to include NRDEC, RDEC & SMDC Natick, MA & Huntsville, AL	0.817	0.143		0.000		0.000		0.000	0	0.960	0.960
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) MDA Program Support 9 BX07	Various/ Various	MDA Arlington, VA	2.613	9.979		0.000		0.000		0.000	0	12.592	12.592
Launcher Contract Support Services (CSS) 12 BX07	C/CPFF	Teledyne Solutions Huntsville, AL	1.432	0.482		0.000		0.000		0.000	0	1.914	1.914
Launcher OGA 12 BX07	TBD/TBD	RDEC & SMDC Huntsville, AL	0.495	0.340		0.000		0.000		0.000	0	0.835	0.835
Launcher MDA Program Support 12 BX07	Various/ Various	MDA Arlington, VA	3.480	2.829		0.000		0.000		0.000	0	6.309	6.309
Program Management CSS 7 BX07	C/CPFF		9.634	5.607		0.000		0.000		0.000	0	15.241	15.241

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

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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			
		Multiple to include Dynetics, BAE, & L3 Huntsville, AL; Rockville, MD & Salt Lake City, UT											
Program Management MDA Program Support 7 BX07	Various/ Various	MDA Arlington, VA	5.258	2.616		0.000		0.000		0.000	0	7.874	7.874
Program Management OGA 7 BX07	TBD/TBD	Multiple to include IMMC & USAADASCH Huntsville, AL	0.746	1.042		0.000		0.000		0.000	0	1.788	1.788
Subtotal			334.045	166.341		0.000		0.000		0.000	0.000	500.386	503.433

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			
System Test Lockheed Martin 10 BX07	SS/CPAF	LMSSC	50.848	0.000		0.000		0.000		0.000	0	50.848	50.848

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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			
		Sunnyvale, CA; Huntsville, AL											
Subtotal			50.848	0.000		0.000		0.000		0.000	0.000	50.848	50.848

Remarks

NA

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
	1,591.052	552.113		0.000		0.000		0.000	0.000	2,143.165	2,146.212

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Element Logistics Demonstrations Phase 2	■	■																										
GTD-03 (Full BMDS Distributed Test)	■	■																										
Insensitive Munitions/ Hazards Testing Phase 1	■	■																										
Continue Fire Control and Comm BQT	■	■	■	■																								
AN/TPY-2 Government Ground Test (GGT) Comp	■	■	■	■																								
Launcher GGT Comp	■	■	■	■																								
Conduct FTT-10a (THAAD Operational Intercept Flight Test)		■																										
Complete Prime Power Unit (PPU) #1		■																										
Integrated Baseline Review Complete		■																										
Battery #2 Initial Hardware Delivery			■																									
Insensitive Munitions/Hazards Testing Phase 2			■	■																								
Element Logistics Demonstrations			■	■																								
Complete Prime Power Unit (PPU) #2				■																								
Interceptor Delivery for FTT-11 (THAAD Intercept Flight Test)				■																								
Battery #1 Element Integ & Checkout Complete				■																								
Element Logistics Demonstration Complete				■																								

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Battery #1 Ground Components/Battery Support Center Deliveries Complete				■																								
Launcher Build 4 S/W Formal Release Integ at SIL					■																							
Fire Control and Comm B5 S/W Formal Rel of Information Assurance					■																							
AN/TPY-2 Radar B4.2 Formal Update Rel					■																							
Conduct FTT-11 (THAAD Intercept Flight Test)					■																							
AN/TPY-2 Block Qual Test (BQT)					■	■	■																					
Launcher Block Qualification Test (BQT)					■	■	■																					
Fire Control and Comm Block Qual Test (BQT) Comp					■	■	■																					
Interceptor Block Qualification Test					■	■	■																					
Insensitive Munitions/Hazards Testing Phase 3					■	■	■	■																				
Conduct FTT-12 (THAAD Intercept Flight Test)						■																						
GTX-04a (Regional Focused HWIL Test)						■																						
Battery #1 8th Interceptor Delivery								■																				
Interceptor (1 of 2) Deliver for FTT-12 (THAAD Intercept Flight Test)						■																						
Interceptor (2 of 2) Deliver for FTT-12 (THAAD Intercept Flight Test)						■																						

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Battery #2 Ground Components/Battery Support Center Deliveries Complete						■																						
GTX-04b (Full BMDS Distributed Test)							■																					
Battery #1 Interceptor Deliveries Complete								■																				
Block Qualification Test (BQT) Completion								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Element Logistics Demonstrations Phase 2	1	2009	2	2009
GTD-03 (Full BMDS Distributed Test)	1	2009	2	2009
Insensitive Munitions/ Hazards Testing Phase 1	1	2009	2	2009
Continue Fire Control and Comm BQT	1	2009	4	2009
AN/TPY-2 Government Ground Test (GGT) Comp	1	2009	4	2009
Launcher GGT Comp	1	2009	4	2009
Conduct FTT-10a (THAAD Operational Intercept Flight Test)	2	2009	2	2009
Complete Prime Power Unit (PPU) #1	2	2009	2	2009
Integrated Baseline Review Complete	2	2009	2	2009
Battery #2 Initial Hardware Delivery	3	2009	3	2009
Insensitive Munitions/Hazards Testing Phase 2	3	2009	4	2009
Element Logistics Demonstrations	3	2009	4	2009
Complete Prime Power Unit (PPU) #2	4	2009	4	2009
Interceptor Delivery for FTT-11 (THAAD Intercept Flight Test)	4	2009	4	2009
Battery #1 Element Integ & Checkout Complete	4	2009	4	2009
Element Logistics Demonstration Complete	4	2009	4	2009
Battery #1 Ground Components/Battery Support Center Deliveries Complete	4	2009	4	2009
Launcher Build 4 S/W Formal Release Integ at SIL	1	2010	1	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT BX07: <i>Terminal High Altitude Area Defense (THAAD) Block 2.0</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Fire Control and Comm B5 S/W Formal Rel of Information Assurance	1	2010	1	2010
AN/TPY-2 Radar B4.2 Formal Update Rel	1	2010	1	2010
Conduct FTT-11 (THAAD Intercept Flight Test)	1	2010	1	2010
AN/TPY-2 Block Qual Test (BQT)	1	2010	3	2010
Launcher Block Qualification Test (BQT)	1	2010	3	2010
Fire Control and Comm Block Qual Test (BQT) Comp	1	2010	3	2010
Interceptor Block Qualification Test	1	2010	3	2010
Insensitive Munitions/Hazards Testing Phase 3	1	2010	4	2010
Conduct FTT-12 (THAAD Intercept Flight Test)	2	2010	2	2010
GTX-04a (Regional Focused HWIL Test)	2	2010	2	2010
Battery #1 8th Interceptor Delivery	3	2010	3	2010
Interceptor (1 of 2) Deliver for FTT-12 (THAAD Intercept Flight Test)	2	2010	2	2010
Interceptor (2 of 2) Deliver for FTT-12 (THAAD Intercept Flight Test)	2	2010	2	2010
Battery #2 Ground Components/Battery Support Center Deliveries Complete	2	2010	2	2010
GTX-04b (Full BMDS Distributed Test)	3	2010	3	2010
Battery #1 Interceptor Deliveries Complete	4	2010	4	2010
Block Qualification Test (BQT) Completion	4	2010	4	2010

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</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
<i>EX07: Terminal High Altitude Area Defense (THAAD) Block 5.0</i>	0.000	60.126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	60.126
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

A. Mission Description and Budget Item Justification

THAAD Advanced Capability Development (ACD) (formerly Block 5.0) initiates the next incremental capability delivered as part of THAAD's evolutionary acquisition/development strategy. ACD will include the capability to launch THAAD interceptors using data from other Ballistic Missile Defense System (BMDS) sensor elements and an expansion of the THAAD element's capability to provide THAAD sensor data to the BMDS in support of the Unifying Missile Defense Function (UMDF). ACD will include integration of Extremely High Frequency (EHF) communications, improved track correlation and engagement coordination with the BMDS, and the ability to launch THAAD interceptors based on system track data from the BMDS Command and Control/Battle Management and Communications (C2BMC). This enhanced BMDS C2BMC interface enables the THAAD Interceptor Launch on BMD System Track capability, which is included in BMDS Integrated Build D. Development also includes the added capability to conduct Concurrent Test, Training, and Operations and continued participation in BMDS Integrated System Ground and Flight tests. Sustainment continues the field support and contractor logistics support for fielded Battery hardware. AN/TPY-2 Radar development will be performed under the Sensors Program Element and integrated into the THAAD weapon system.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
System Test See Description Below <i>FY 2009 Accomplishments:</i> N/A	0.000	4.020	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> THAAD System Test is responsible for developing and executing all aspects of the THAAD program flight test objectives, ballistic interceptor target solutions, system flight test execution, range facility preparations, documentation requirements, data analysis and reporting.</p> <p>Develop and acquire mobile launch and test support equipment Initiate requirements definition for modification to flight test infrastructure to support Unifying Missile Defense Function (UMDF) changes and Ballistic Missile Defense System (BMDS) Ground and Flight testing Initiate support planning for BMDS Ground and Flight Test events for THAAD interoperability with other BMDS Elements</p> <p><i>FY 2011 Base Plans:</i> All System Test activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Weapon Sys Engr & Integ Team (WSEIT) See Description Below</p> <p><i>FY 2009 Accomplishments:</i> N/A</p> <p><i>FY 2010 Plans:</i> Responsible for all engineering efforts required to translate approved Ballistic Missile Defense System (BMDS) capabilities and requirements into the THAAD capability. Activities include coordination and requirements analysis, system integration and verification, software engineering to include</p>		0.000	29.394	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
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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>independent verification and validation, configuration management, and BMDS integration for each THAAD component. THAAD WSEIT is responsible for all aspects of risk management, system security, and information assurance for the THAAD program. Additionally, WSEIT will continue to develop the capability for ;BMDS Integrated Build D that continues to build upon the capabilities established in Builds A through C and represents a continuation toward achieving the Technical Objectives and Goals. (TOG).</p> <p>Support C2BMC in the integration of Extremely High Frequency (EHF) communication capabilities into the THAAD weapon system</p> <p>*Continue the development of THAAD BMDS Unifying Missile Defense Functions (UMDFs) to include resolution process for correlation issues involving Link-16 Tracks, enhanced engagement coordination, and implementation of Hit/Kill assessment for BMDS intercepts</p> <p>Extend THAAD planning interoperability with joint and coalition planning systems</p> <p>Develop designs for Launch on BMDS System Track</p> <p>Modify system to external and component-to-component interface specifications and interface control documents for UMDF changes</p> <p>Conduct requirements and analysis focused on risk reduction for development of a 21-inch booster to extend range and increase defended area</p> <p>Initiate support planning for BMDS Flight Test events for THAAD interoperability with other BMDS Elements</p> <p>Continue to evaluate incremental HW/SW build capabilities for BMDS Test Events</p> <p>Initiate participation in Scenario Certification, Mission Planning, and Mission Readiness Review activities</p> <p>Initiate the planning to consolidate Engineering Teams, Tools (databases for Requirements and Trouble Reports) to include integration and test facilities</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Initiate the integration and implementation of THAAD and its components in the BMDS through participation in MDA Ground Test Campaign and Combatant Commander (COCOM) war games, and exercises, as well as Performance Assessments</p> <p>Initiate the design, development, and integration of hardware and software to combine the capability of Simulation-Over-Live-Drive (SOLD), Concurrent Test, Training and Operation (CTTO), and Distributed Multi-Echelon System (DMeTs) into a concurrent test training and operations capability</p> <p>* These enabling activities will allow delivery of the THAAD Launch on BMDS System Track capability.</p> <p><i>FY 2011 Base Plans:</i> All WSEIT activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> N/A</p> <p><i>FY 2010 Plans:</i> The THAAD Fire Control and Communication (TFCC) is composed of two Tactical Station Groups (TSGs). Each TSG consists of a Tactical Operations Station, a Launch Control Station, and a Station Support Group. The TFCC provides the platform for Ballistic Missile Defense System (BMDS) Unifying Missile Defense Functions (UMDFs) and planning, control, coordination, execution, and</p>		0.000	14.181	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>		PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>						
B. Accomplishments/Planned Program (\$ in Millions)										
<p>communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with external air and interceptor defense and intelligence systems and agencies integrated into the BMDS and is the principal support to the BMDS UMDF. TFCC software changes, include, improvement to Link 16 track correlation and engagement coordination with other BMDS elements; and external interface changes for integration of Command, and Control/Battle Management and Communications (C2BMC) communications.</p> <p>Support C2BMC in the integration of Extremely High Frequency (EHF) communications capabilities into the TFCC component Prototype design and begin implementation new BMDS requirements including Link 16 update requirements to support BMDS UMDFs to include correlation, engagement coordination and planning Support Concurrent Test, Training and Operations (CTTO) software development and integration **Support concept development for Launch on BMD System Track in support of the BMDS UMDFs. This enhanced capability will extend THAAD coverage by earlier missile launch using external BMDS sensor data Support THAAD Laptop Planner development and integration via THAAD Defense Planner Prototype (TDP2) enhancement to support THAAD integration into Army and theater-level ballistic missile defense planning</p> <p>** This enabling activity will allow delivery of the THAAD Launch on BMD System Track capability.</p> <p><i>FY 2011 Base Plans:</i> All TFCC activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Launcher						0.000	1.500	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>				
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> N/A</p> <p><i>FY 2010 Plans:</i> The Terminal High Altitude Area Defense (THAAD) Launcher consists of a U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated missile round pallet and supports and secures eight ready-to-launch interceptors.</p> <p>Provide engineering support to incorporate advanced capabilities into the current Launcher design</p> <p><i>FY 2011 Base Plans:</i> All Launcher activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Program Management</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> N/A</p> <p><i>FY 2010 Plans:</i> Program Management provides procurement support function across the program such as strategic planning, program integration, cost estimating, contracting, and financial management which includes</p>		0.000	3.717	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>preparation of financial statements, reimbursement of financial services provided by Defense Finance Accounting Service (DFAS), internal review and audit, earned-value management, and program assessment.</p> <p>Provide management, leadership, and planning for all Advance Capability Development activities Provide support to the Advance Capability Development System Requirements Review (SRR) Provide salaries, travel, training, and supplies Continue to provide project-wide programmatic support</p> <p><i>FY 2011 Base Plans:</i> All Program Management activities transition to project MD07 in FY 2011</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>MDA Infrastructure(QS, DEP, DEE, DOB)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> N/A</p> <p><i>FY 2010 Plans:</i> Provide Quality Safety Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Provide dedicated Information Technology service for mission specific research and test efforts to include classified and unclassified networks</p>		0.000	7.314	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> N/A					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	60.126	0.000	0.000	0.000

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
• 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
• 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

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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense</i> <i>(THAAD) Block 5.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense</i> <i>(THAAD) Block 5.0</i>
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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>
• 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
• 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

The planned acquisition strategy for Advanced Capability Development activities is for a Sole Source Indefinite Delivery/Indefinite Quantity (IDIQ) contract, targeted for award in FY 2010. The program is posturing for potential competitive award in FY 2013. This contract type offers the flexibility of awarding separate Task Orders for the various statements of work requirements, each with its own duration and fee type.

In addition, MDA will transition from the existing legacy, project-oriented System Engineering and Technical Assistance (SETA) construct to an enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System (BDMS) mission. The objectives are to implement national engineering and support services for the BDMS 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

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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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			
System Test Lockheed Martin 12 EX07	SS/CPAF	LMSSC Sunnyvale, CA; Huntsville, AL; NM & HI	0.000	4.020		0.000		0.000		0.000	0	4.020	4.020
Weapon Sys Engr & Integ Team (WSEIT) Lockheed Martin 11 EX07	SS/CPAF	LMSSC Sunnyvale, CA & Huntsville, AL	0.000	29.394		0.000		0.000		0.000	0	29.394	29.685
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) Lockheed Martin and Raytheon EX07	SS/CPAF	LMSSC and Raytheon Huntsville, AL	0.000	14.181		0.000		0.000		0.000	0	14.181	14.181
Launcher Lockheed Martin 13 EX07	SS/CPAF	LMSSC Huntsville, AL; Camden, AK; Dallas & Lufkin, TX	0.000	1.500		0.000		0.000		0.000	0	1.500	1.500
Program Management Lockheed Martin EX07	SS/CPFF	LMSSC Sunnyvale, CA	0.000	3.717		0.000		0.000		0.000	0	3.717	3.717
MDA Infrastructure (QS, DEP, DEE, DOB) MDA Infrastructure(QS, DEP, DEE, DOB) EX07	Various/ Various	Various Various	0.000	7.314		0.000		0.000		0.000	0	7.314	7.314
Subtotal			0.000	60.126		0.000		0.000		0.000	0.000	60.126	60.417

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	60.126		0.000		0.000		0.000	0.000	60.126	60.417

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Advanced Capability Development Contract Award								■																				
Advanced Capability Development SRR								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT EX07: <i>Terminal High Altitude Area Defense (THAAD) Block 5.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Advanced Capability Development Contract Award	4	2010	4	2010
Advanced Capability Development SRR	4	2010	4	2010

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</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
XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>	21.796	49.595	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	71.391
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

Operations & Sustainment Support of THAAD Batteries provides for logistical support to field, operate, maintain, repair and replenish the THAAD weapon system as it fielded to the Army. Contractor Logistics Support (CLS) technicians are responsible for field and sustainment maintenance including the repair and supply chain management of the required spares and repair parts. Also, the contractor will provide engineering support services and software maintenance support. The Operations & Sustainment Support associated with the Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radars allocated to THAAD Batteries are provided for under the Sensors Program Element.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Field Support and Contract Logistics Support (CLS) See Description Below <i>FY 2009 Accomplishments:</i> Award FY09 Field Support contract modification Continued THAAD Field Support/CLS for Battery #1 and #2 hardware Initiated development of Software Maintenance Plan required for Post Deployment Software Support (PDSS)	21.796	49.595	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Developed ;hardware/software utilization tracking system to ensure accountability/compatibility of THAAD end items Continued procurement of replenishment spares for Battery #1 and #2 Supported Collective Training for Battery #1 <i>FY 2010 Plans:</i> Continue THAAD field support/Contract Logistics Support (CLS) for Battery #1 and #2 hardware Complete software maintenance plan required for Post Deployment Software Sustainment (PDSS) Provide maintenance support for components tactical software Continue procurement of replenishment spares Support Force Development Experimentation (FDE) and Limited User Test (LUT) for Battery #1 Initiate New Equipment Training for Battery #2 Provide ;Supportability Engineering and Planning Support <i>FY 2011 Base Plans:</i> All Field Support and Contract Logistics Support transition to project MD07 in FY 2011 <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	21.796	49.595	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
• 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

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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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense</i> <i>(THAAD) Sustainment</i>
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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>
• 0603883C: <i>Ballistic Missile</i> <i>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</i> <i>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</i> <i>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</i> <i>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</i> <i>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</i> <i>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 &</i> <i>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</i> <i>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</i> <i>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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 0603898C: <i>BMD JOINT</i> <i>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</i> <i>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</i> <i>INTEGRATION & OPERATIONS</i> <i>CENTER (MDIOC)</i>	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699
	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553

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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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense</i> <i>(THAAD) Sustainment</i>
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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>
• 0603906C: <i>REGARDING TRENCH</i>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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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

The acquisition strategy implemented for FY 2009 modified the existing Development contract to add the Field Support and Contractor Logistics Support. The approved acquisition strategy, beginning in FY 2010, is to award a Sole Source, Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order Contract for Field Support and Contractor Logistics Support.

E. Performance Metrics

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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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			
Field Support and Contract Logistics Support (CLS) Lockheed Martin and Raytheon2 XX07	SS/Various	LMSSC & Raytheon CA, TX, AL, MA, NH, IL, FL, & MD	21.372	49.595	Jan 2010	0.000		0.000		0.000	0	70.967	72.388
Subtotal			21.372	49.595		0.000		0.000		0.000	0.000	70.967	72.388

Remarks

NA

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			
Field Support and Contract Logistics Support (CLS) GFE XX07	TBD/TBD	Multiple to include CECOM, TACOM, GSA, RDEC & SMDC Huntsville, AL	0.424	0.000		0.000		0.000		0.000	0	0.424	0.424
Subtotal			0.424	0.000		0.000		0.000		0.000	0.000	0.424	0.424

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	21.796	49.595		0.000		0.000		0.000	0.000	71.391	72.812

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Field Support and CLS FY09 Contract Mod			■																													
Field Support and CLS FY10 Contract Award					■																											

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT XX07: <i>Terminal High Altitude Area Defense (THAAD) Sustainment</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Field Support and CLS FY09 Contract Mod	3	2009	3	2009
Field Support and CLS FY10 Contract Award	1	2010	1	2010

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</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
MD07: <i>THAAD</i>	0.000	0.000	420.463	0.000	420.463	240.177	324.264	477.944	498.688	Continuing	Continuing
Quantity of RDT&E Articles	0	0	24	0	24	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

This is the continuation of THAAD's Advanced Capability Development and Sustainment. This continues the concept of a rapidly deployable configuration to support the Terminal Defense Segment (TDS) mission as well as supporting the strategic surveillance missions. This development continues the capability to launch THAAD interceptors using data from other Ballistic Missile Defense System (BMDS) sensor elements and an expansion of the THAAD element's capability to provide THAAD sensor data to the BMDS in support of the Unifying Missile Defense Function (UMDF). Development will include support of BMDS Command and Control/Battle Management and Communications (C2BMC) integration of Extremely High Frequency (EHF) communications, improved track correlation and engagement coordination with the BMDS, **and the ability to launch THAAD interceptors based on system track data from the C2BMC. This enhanced BMDS C2BMC interface enables the THAAD Interceptor Launch on BMD System Track. Development also continues the added capability to conduct Concurrent Test, Training, and Operations and continued participation in BMDS Integrated System Ground and Flight tests. Sustainment continues the field support and contractor logistics support for fielded Battery hardware. AN/TPY-2 Radar development will be performed under the Sensors Program Element and integrated into the THAAD weapon system.

** These enabling activities will allow delivery of the THAAD Launch on BMD System Track, part of BMDS Integrated Build D.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Batteries #1 and #2 See Description Below	0.000	0.000	63.851	0.000	63.851

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
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> All Batteries #1 and #2 activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All Batteries #1 and #2 activities in FY 2010 are in projects BX07 ;</p> <p><i>FY 2011 Base Plans:</i> Batteries #1 and #2 will include a basic load of 48 Interceptors, six Launchers (1 provided by the development contract), two Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode) Radars (provided by Sensors Directorate), 4 THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) (2 provided by the development contract), the required Peculiar and Common Support Equipment, and two Interceptors for flight test (provided to development contract). Following operational testing, the Batteries will be fielded to the Army.</p> <p>Complete Battery #2 ground component hardware integration Deliver 23 Interceptors and 1 flight test vehicle Complete all hardware deliveries and contract effort</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> All AN/TPY-2 activities for FY 2009 are in project BX07</p>		0.000	0.000	24.640	0.000	24.640

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> All AN/TPY-2 activities in FY 2010 are in projects BX07</p> <p><i>FY 2011 Base Plans:</i> The Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) (THAAD Mode) Radar is a solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The radar uses fence, volume, and cued search modes, and provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The radar hardware is a transportable system composed of the Antenna Equipment Unit, Electronics Equipment Unit, Cooling Equipment Unit, and the Prime Power Unit (PPU).</p> <p>The manufacturing cost associated with the AN/TPY-2 (THAAD Mode) Radars for THAAD Batteries are provided for under the Sensors Program Element.</p> <p>Complete transition of flight test program at Reagan Test Site (RTS) Support the flight test program at Reagan Test Site Support Government Ground Testing in Cold Region Demonstration Complete the re-accreditation of the Simulation-Over-Live-Driver (SOLD) to include the Radio Frequency Scene Generator (RFSG) Continue to support the development of THAAD Support adapting system track processing for the battle Management design</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
System Test See Description Below		0.000	0.000	63.322	0.000	63.322

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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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> All System Test activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All System Test activities in FY 2010 are in projects BX07 and EX07</p> <p><i>FY 2011 Base Plans:</i> THAAD System Test is responsible for developing and executing all aspects of the THAAD program flight test objectives, ballistic interceptor target solutions, system flight test execution, range facility preparations, documentation requirements, data analysis and reporting.</p> <p>Complete transition flight test program at Reagan Test Site (RTS) Participate in Ballistic Missile Defense System (BMDS) Flight Tests Define and interpret THAAD target requirements and assess proposed target solutions for flight test program Provide data management, facilities operations, and post test analysis and reporting support in support of BMDS System Test ** Continue flight test planning and analysis, range interface, coordination with Operational Test Agencies (OTAs), flight test operations, post-flight test analysis and reporting, data distribution and data storage at Reagan Test Site (RTS) Monitor targets design, development, delivery, and execution to support flight test program Collect and support analysis of Empirical Measurement Events (EME) and Critical Engagement Conditions (CEC)*** data during flight testing Complete Insensitive Munitions/Final Hazard Classification (IM/FHC) testing Complete execution of Government Ground Testing in Cold Region Demonstration Complete Government Ground Test (GGT) data management, distribution, and archival/storage Continue support of lethality assessment Complete mobile launch and test support equipment</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>** Engaging targets with countermeasures is a new capability being demonstrated in FY 2011</p> <p>*** CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Weapon Sys Engr & Integ Team (WSEIT)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> All WSEIT activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All WSEIT activities in FY 2010 are in projects BX07 and EX07</p> <p><i>FY 2011 Base Plans:</i> Responsible for all engineering efforts required to design, build, integrate and test approved Ballistic Missile Defense System (BMDS) Integrated Build D requirements, including use of Link-16 based BMD System tracks to complete ballistic missile engagement. Coordinate and conduct requirements analysis, system integration and verification, software engineering to include independent verification and validation, configuration management, and BMDS integration for each THAAD component. THAAD WSEIT is responsible for all aspects of risk management, system security, and information assurance for the THAAD program. Additionally, WSEIT will continue to develop the capability for Integrated BMDS Build D that continues to build upon the capabilities established in Builds A through C, (including functionality such as limited peer-to-peer engagement coordination and implementation</p>		0.000	0.000	61.716	0.000	61.716

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>of Joint Range Extension 3011 to execute regional defense missions) and represents a continuation toward achieving the Technical Objectives and Goals (TOG).</p> <p>Continue supporting pre-flight testing in the System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) facility</p> <p>Complete support of transition at Reagan Test Site (RTS)</p> <p>Support Flight Test program at RTS</p> <p>Continue integration and implementation of THAAD and its components in the BMDS through participation in MDA Ground Test Campaign and Combatant Commander (COCOM) war games, and exercises, as well as Performance Assessments</p> <p>Continue System Analysis and mission planning in support of flight testing</p> <p>Conduct analysis of Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) data during flight testing</p> <p>Complete support to the transition of flight test operations from Pacific Missile Range Facility (PMRF) to Reagan Test Site (RTS)</p> <p>Complete the re-accreditation of the Simulation-Over-Live-Driver (SOLD) to include upgraded hardware platforms and the Radio Frequency Scene Generator (RFSG)</p> <p>*Support C2BMC in the integration of Extremely High Frequency (EHF) communications capabilities into the THAAD weapon system</p> <p>**Continue the development of THAAD BMDS Unifying Missile Defense Functions (UMDFs) to include resolution process for correlation issues involving Link-16 Tracks, enhanced peer-to-peer engagement coordination, and implementation of Hit/Kill assessment for BMDS intercepts</p> <p>Extend THAAD planning interoperability with joint and coalition planning systems</p> <p>Define engagement coordination designs for THAAD BMDS integration to include increased BMDS effectiveness and Common Threat</p> <p>Adapt System Track processing into THAAD battle management design</p> <p>Develop designs for Launch on BMDS System Track, including use of BMD Overhead Non-Imaging Infra-Red (ONIR) Architecture Data for weapons system utilization</p>					

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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 0603881C: <i>Ballistic Missile Defense</i> <i>Terminal Defense Segment</i>		PROJECT MD07: <i>THAAD</i>		
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Modify system to external and component to component interface specifications and interface control documents for UMDf changes</p> <p>Continue support planning for BMDS Flight Test events for THAAD interoperability with other BMDS Elements</p> <p>Continue to evaluate incremental HW/SW build capabilities for BMDS Test Events</p> <p>Continue participation in flight Scenario Certification, Mission Planning, and Mission Readiness Review activities</p> <p>Continue the planning to consolidate Engineering Teams, Tools (databases for Requirements and Trouble Reports) to include integration and test facilities</p> <p>Continue the development of automated test tools for Post Deployment Software Support (PDSS) activities</p> <p>Continue the design, development, and integration of hardware and software to combine the capability of Simulation-Over-Live-Driver (SOLD), Concurrent Test, Training, and Operations (CTTO), and Distributed Multi-Echelon Training System into a CTTO capability</p> <p>Design, develop, qualification test, release, field, and support incremental first annual release of Post Deployment Software (PDS) builds for each THAAD component</p> <p>* New capability developed for FY 2011</p> <p>** This enabling activity will allow delivery of the THAAD Launch on BMD System Track capability; which is an addition to the ; BMDS Integrated Build D.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Interceptor</p> <p>See Description Below</p>		0.000	0.000	27.726	0.000	27.726

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
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> All Interceptor activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All Interceptor activities in FY 2010 are in projects BX07</p> <p><i>FY 2011 Base Plans:</i> The THAAD Interceptor is a certified round that is propelled by a single-stage, solid-propellant rocket booster. Its Kill Vehicle (KV) possesses a Divert and Attitude Control System (DACS) and an infrared Seeker used to destroy its target through hit-to-kill technology.</p> <p>Continue to support Insensitive Munitions/Final Hazard Classification (IM/FHC) testing Support stockpile reliability test program Complete transition of flight test program at Reagan Test Site (RTS) Support Flight Test program at RTS Complete support to Battery Interceptor production assembly Support post deployment software development Continue to support planning and execution of BMDS Integration tests to ensure missile performance optimizes overall BMDS performance Evaluate missile performance against real world scenarios and potential threats Continue to develop and implement retrofit activities on Battery Interceptors Continue development and fabrication of test instrumentation kits to support BMDS flight tests Complete (2) Missile Stockpile Test Sets</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Integrated Logistics Support (ILS)		0.000	0.000	23.024	0.000	23.024

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency				DATE: February 2010		
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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> All ILS activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All ILS ;activities in FY 2010 are in project BX07</p> <p><i>FY 2011 Base Plans:</i> Provide each THAAD component with all aspects of logistics support. Responsible for transportation of all THAAD system equipment and ensuring the required Government Furnished Equipment (GFE) is available as required by contract. Additionally, works with the user in developing all aspects of training for the components and has a key role in the fielding of the THAAD System to the Army.</p> <p>Support the completion of transition to Reagan Test Site (RTS) Support Flight Test program at RTS Conduct Type 2 Business Case Analysis (BCA) for Sustainment Level Maintenance working in conjunction with Missile Defense Agency Deputy for acquisition Management to define supportability concept Complete Core Logistics Assessment and Core Depot Assessment/Source of Repair Analysis Finalize Depot Maintenance Support Plan Complete New Equipment Training (NET) and Collective Training for Battery #2 Update Contract Logistics Support concept Initiate Institutional Conduct of Fire (ICOFT) design and acquisition</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs)		0.000	0.000	27.634	0.000	27.634

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

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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> All TFCC activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All TFCC activities in FY 2010 are in projects BX07 and EX07</p> <p><i>FY 2011 Base Plans:</i> The THAAD Fire Control and Communication (TFCC) is composed of two Tactical Station Groups (TSGs). Each TSG consists of a Tactical Operations Station, a Launch Control Station, and a Station Support Group. The TFCC provides the Ballistic Missile Defense System (BMDS) Unifying Missile Defense Functions (UMDFs) and planning, control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. It is interoperable with external air and interceptor defense and intelligence systems and agencies integrated into the BMDS and is the principal support to the BMDS UMDF. TFCC software changes, to include, improvement to Link 16 track correlation and engagement coordination with other BMDS elements; and external interface changes for integration of Command, and Control/Battle Management and Communications (C2BMC) Enhanced Communications are being incorporated.</p> <p>Complete transition of flight test program at Reagan Test Site (RTS) Support Flight Test program at RTS Continue implementation of the new BMDS requirements Continue implementation of the Link 16 update requirements to support BMDS UMDFs to include correlation, engagement coordination and planning Support of C2BMC in the integration of Extremely High Frequency (EHF) communications capabilities into the TFCC component ** Continue concept development for Launch on BMD System Track in support of the BMDS UMDFs</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue support THAAD Laptop Planner (TDP) development and integration via TDP2 enhancement to support THAAD integration into Army and theater-level ballistic missile defense planning</p> <p>Continue support of Concurrent Test, Training, and Operations (CTTO) software development and integration</p> <p>Continue implementation and begin testing and analysis of UMDf</p> <p>Support refurbishment of 1 Tactical Station Group in preparation for Institutional Training</p> <p>Support Government Ground Testing in Cold Region Demonstration</p> <p>Initiate development of Netted Embedded Training (Netted ET) to enable THAAD Battery participation in common training scenarios, near real time with other THAAD Batteries, lower tier units, other elements of the Ballistic Missile Defense System (BMDS) (through Distributed Multi-Echelon Training System)</p> <p>** This enabling activity will allow delivery of the THAAD Launch on BMD System Track capability; which is an addition to the ;BMDS Integrated Build D.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Launcher</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> All Launcher activities for FY 2009 are in project BX07</p> <p><i>FY 2010 Plans:</i> All Launcher activities in FY 2010 are in projects BX07 and EX07</p>		0.000	0.000	15.174	0.000	15.174

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> The Terminal High Altitude Area Defense (THAAD) Launcher consists of a U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant that transports an integrated missile round pallet and supports and secures eight ready-to-launch interceptors.</p> <p>Complete transition of flight test program at Reagan Test Site (RTS) Support Flight Test program at RTS Support System Integration Laboratory (SIL) Hardware-in-the-Loop (HWIL) integration activities of hardware and software Support Government Ground Testing in Cold Region Demonstration Support software development for Unifying Missile Defense Functions (UMDFs) **Continue Launcher software development of Launch on BMD System Track Continue engineering support to incorporate advanced capabilities into the current launcher design</p> <p>** This enabling activity will allow delivery of the THAAD Launch on BMD System Track capability in FY 2015; which is an addition to the ;BMDS Integrated Build D.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Program Management See Description Below</p> <p><i>FY 2009 Accomplishments:</i> All Program Management activities for FY 2009 are in project BX07</p>		0.000	0.000	14.301	0.000	14.301

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency				DATE: February 2010		
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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 2010 Plans:</i> All Program Management activities for FY 2010 are in project BX07 and EX07</p> <p><i>FY 2011 Base Plans:</i> Program Management provides procurement support function across the program such as strategic planning, program integration, cost estimating, contracting, and financial management which includes preparation of financial statements, reimbursement of financial services provided by Defense Finance Accounting Service (DFAS), internal review and audit, earned-value management, and program assessment.</p> <p>Provide management, leadership, and planning for all activities Provide support to the Advanced Capability Development System Requirements Review (SRR) Provide salaries, travel, training, and supplies Continue to provide project-wide programmatic support</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Modeling and Simulations See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> All Modeling and Simulations activities for FY 2010 are in project BX07</p>		0.000	0.000	13.090	0.000	13.090

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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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 2011 Base Plans:</i></p> <p>The Ballistic Missile ;Defense (BMD) ;Digital Simulations Architecture (DSA) is the primary M&S System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the Ballistic Missile Defense System (BMDS) Program.</p> <p>Conduct ;BMDS Hardware-in-the-Loop (HWIL) stimulation framework Verification and Validation (V&V) for BMDS ground tests</p> <p>Continue to define and plan for enhancement to the Single Stimulation Framework (SSF) required for execution of the GT-05 campaign to include identification of interdependencies required for execution</p> <p>Provide development, Operations and Maintenance, and Independent V&V of standardized phenomenology and lethality tools and models for the common environmental toolset</p> <p>Evolve and enhance the SSF to provide increased Warfighter support, specifically Training and Exercises</p> <p>Integrate the SSF with additional Allied/Coalition elements to expand Distributed Ground Test and Exercise venues</p> <p>Continue integration of the SSF with the Digital Stimulation Architecture</p> <p>Product Line development, sustainment, maintenance and product support for HWIL products</p> <p>Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for the GTX, GTI, GTD ground tests, Active Layered Theatre Ballistic Missile Defense (ALTBMD) exercises, Assured Response (AR) exercises, Foreign Exercises, Near-Term Discrimination (NTD) excursions tests, and CTTO demos</p> <p>Conduct BMDS HWIL stimulation framework V&V for BMDS GTX, GTI, GTD ground tests, ALTBMD exercises, Assured Response (AR) exercises, Foreign Exercises, and Concurrent Test, Training, and Operations (CTTO) demos</p> <p>Provide systems engineering support to upgrade the BMDS stimulation framework to support wideband debris for BMDS sensors</p>					

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Continue integration of the BMDS stimulation framework with the additional sensors Provide common threat representations and scenarios to meet specific event and customer requirements for BMDS HWIL Framework <i>FY 2011 OCO Plans:</i> NA					
Sustainment See Description Below <i>FY 2009 Accomplishments:</i> All Sustainment activities for FY 2009 are in project XX07 <i>FY 2010 Plans:</i> All Sustainment activities in FY 2010 are in projects XX07 ; <i>FY 2011 Base Plans:</i> Operations & Sustainment Support of THAAD Batteries provides for logistical support to field, operate, maintain, repair and replenish the THAAD weapon system as it fielded to the Army. Contractor Logistics Support (CLS) technicians are responsible for field and sustainment maintenance including the repair and supply chain management of the required spares and repair parts. Also, the contractor will provide engineering support services and software maintenance support. The Operations & Sustainment Support associated with the Army Navy/Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radars allocated to THAAD Batteries are provided for under the Sensors Program Element. Continue THAAD field support/CLS for Battery #1 and #2 hardware Provide maintenance support for components tactical software Continue procurement of replenishment spares	0.000	0.000	85.985	0.000	85.985

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Complete New Equipment Training and Collective Training for Battery #2 Initiate Battery #1 Replacement Training Provide ;Supportability Engineering and Planning Support <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	420.463	0.000	420.463

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
• 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
• 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

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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>
• 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
• 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

The planned acquisition strategy for Advance Capability Development activities is for a Sole Source Indefinite Delivery/Indefinite Quantity (IDIQ) contract, targeted for award in FY 2010. The program is posturing for a potential competitive award in FY 2013. This contract type offers the flexibility of awarding separate Task Orders for the various statements of work requirements, each with its own duration and fee type. The acquisition strategy includes completion of Battery #1 and #2 contract, a Sole Source, Cost Plus Award Fee/Cost Plus Incentive Fee awarded December 22, 2006. This acquisition strategy includes continuation of a Sole Source Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order Contract for Field Support and Contractor Logistics Support.

In addition, MDA will transition from the existing legacy, project-oriented System Engineering and Technical Assistance (SETA) 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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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			
Batteries #1 and #2 Lockheed Martin 20 MD07	SS/CPIF	LMSSC Sunnyvale, CA; Huntsville, AL; NM & HI	0.000	0.000		63.851		0.000		63.851	0	63.851	63.851
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar Lockheed Martin 19 MD07	SS/CPAF	Raytheon Bedford, MA	0.000	0.000		21.852		0.000		21.852	102.111	123.963	123.963
Weapon Sys Engr & Integ Team (WSEIT) Lockheed Martin 14 MD07	SS/CPAF	LMSSC Sunnyvale, CA; Huntsville, AL	0.000	0.000		25.104		0.000		25.104	193.614	218.718	218.718
Interceptor Lockheed Martin 18 MD07	SS/CPAF	LMSSC CA/ TX,AL,MA,NH,IL,FL & MD	0.000	0.000		14.426		0.000		14.426	182.761	197.187	197.186
Integrated Logistics Support (ILS) Lockheed Martin 17 MD07	SS/CPAF	LMSSC/ Sunnyvale, CA Huntsville, AL	0.000	0.000		13.417		0.000		13.417	136.300	149.717	149.717
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) LMSSC and Raytheon MD07	SS/CPAF	LMSSC and Raytheon Huntsville, AL	0.000	0.000		18.611		0.000		18.611	100.168	118.779	118.779
Launcher Lockheed Martin 15 MD07	SS/CPAF	LMSSC Huntsville, AL	0.000	0.000		8.628		0.000		8.628	77.255	85.883	85.883

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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			
Program Management Lockheed Martin 15 MD07	SS/CPAF	LMSSC Sunnyvale, CA; Huntsville, AL	0.000	0.000		5.694		0.000		5.694	65.511	71.205	71.205
Modeling and Simulations Teledyne Brown Eng MD07	Various/ Various	THAAD, Huntsville, AL Huntsville, AL	0.000	0.000		13.090		0.000		13.090	26.318	39.408	39.408
Sustainment Lockheed Martin 21 MD07	SS/Various	LMSSC and Raytheon CA/ TX,AL,MA,NH,IL,FL & MD	0.000	0.000		85.985		0.000		85.985	0	85.985	85.985
Subtotal			0.000	0.000		270.658		0.000		270.658	884.038	1,154.696	1,154.695

Remarks
NA

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			
Army Navy/ Transportable Radar Surveillance - Model 2 (AN/TPY-2) Radar	C/Various	MDA Arlington, VA	0.000	0.000		2.788		0.000		2.788	8.079	10.867	10.867

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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			
MDA Program Support 6 MD07													
Weapon Sys Engr & Integ Team (WSEIT) Contract Support Services (CSS) 1 MD07	C/FFP	Dynetics, BAE & L3 Huntsville, AL & Salt Lake City, UT	0.000	0.000		5.771		0.000		5.771	24.133	29.904	29.904
Weapon Sys Engr & Integ Team (WSEIT) Other Government Agencies (OGA) 1 MD07	TBD/TBD	RDEC Huntsville, AL	0.000	0.000		24.075		0.000		24.075	72.657	96.732	96.732
Weapon Sys Engr & Integ Team (WSEIT) MDA Program Support 1 MD07	C/Various	MDA Arlington, VA	0.000	0.000		6.766		0.000		6.766	16.816	23.582	23.582
Interceptor Contract Support Services (CSS) 6 MD07	C/FFP	Dynetics & GA Tech Huntsville AL & GA	0.000	0.000		4.800		0.000		4.800	20.074	24.874	24.874
Interceptor Other Government Agencies 6 MD07	TBD/TBD	RDEC & SMDC Huntsville, AL	0.000	0.000		8.300		0.000		8.300	21.515	29.815	29.815
Interceptor MDA Program Support 5 MD07	C/Various	MDA Huntsville, AL	0.000	0.000		0.200		0.000		0.200	9.935	10.135	10.135
Integrated Logistics Support (ILS) Contract	C/FFP	Dynetic, TST, BAE Huntsville, AL; & Rockville, MD	0.000	0.000		3.520		0.000		3.520	14.721	18.241	18.241

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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			
Support Services 5 MD07													
Integrated Logistics Support (ILS) Other Government Agencies 5 MD07	TBD/TBD	IMMC & USAADASCH Huntsville, AL; & Fort Bliss, TX	0.000	0.000		6.087		0.000		6.087	15.777	21.864	21.864
Integrated Logistics Support (ILS) MDA Program Support 15 MD07	TBD/TBD	CECOM, TACOM, GSA, RDEC & SMDC Ft. Monmouth, NJ; Warren, MI & Huntsville, AL	0.000	0.000		0.000		0.000		0.000	8.985	8.985	8.985
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) Contract Support Services 2 MD07	C/FFP	Dynetics, DCD, & Davidson Tech Silver Spring, MD & Huntsville, AL	0.000	0.000		2.107		0.000		2.107	8.810	10.917	10.917
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) Other Government Agencies 2 MD07	TBD/TBD	NRDEC, RDEC Natick, MA & Huntsville, AL	0.000	0.000		3.643		0.000		3.643	9.443	13.086	13.086
THAAD Fire Control and Communication (TFCC) Tactical Station Groups (TSGs) MDA Program Support 2 MD07	C/Various	MDA Arlington, VA	0.000	0.000		3.273		0.000		3.273	7.958	11.231	11.231

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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			
Launcher Contract Support Services (CSS) 3 MD07	C/FFP	Teledyne Solutions Huntsville, AL	0.000	0.000		1.600		0.000		1.600	6.691	8.291	8.291
Launcher Other Government Agencies 3 MD07	TBD/TBD	RDEC Huntsville, AL	0.000	0.000		2.767		0.000		2.767	7.172	9.939	9.939
Launcher MDA Program Support 3 MD07	C/Various	MDA Huntsville, AL	0.000	0.000		2.179		0.000		2.179	6.018	8.197	8.197
Program Management Contract Support Services 4 MD07	C/FFP	Dynetics, BAE & Tecolote Huntsville, AL	0.000	0.000		2.560		0.000		2.560	10.706	13.266	13.266
Program Management Other Government Agencies 4 MD07	C/Various	IMMC & USAADASCH Huntsville, AL & Fort Bliss, TX	0.000	0.000		4.427		0.000		4.427	11.474	15.901	15.901
Program Management MDA Program Support 4 MD07	C/Various	MDA Arlington, VA	0.000	0.000		1.620		0.000		1.620	4.873	6.493	6.493
Subtotal			0.000	0.000		86.483		0.000		86.483	285.837	372.320	372.320

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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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			
System Test Lockheed Martin 22 MD07	SS/CPAF	LMSSC Sunnyvale, CA; Huntsville, AL; NM & HI	0.000	0.000		20.954		0.000		20.954	140.505	161.459	161.459
System Test Contract Support Services (CSS) 30 MD07	C/FFP	Dynetics, L3 & TSI Huntsville, AL	0.000	0.000		3.659		0.000		3.659	15.301	18.960	18.960
System Test Other Government Agencies MD07	TBD/TBD	WSMR, PMRF, ATEC RDEC & SMDC NM, HI, VA, & Huntsville, AL	0.000	0.000		33.930		0.000		33.930	146.294	180.224	180.224
System Test MDA Program Support MD07	C/Various	MDA Arlington, VA	0.000	0.000		4.779		0.000		4.779	11.299	16.078	16.078
Subtotal			0.000	0.000		63.322		0.000		63.322	313.399	376.721	376.721

Remarks

NA

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			

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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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			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	420.463	0.000	420.463	1,483.274	1,903.737	1,903.736

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
THAAD System B1 S/W Formal Release									■																			
Element Weapon System Verification									■																			
GTX-04c (Full BMDS Distributed Test)									■																			
GTX-04d (Full BMDS HWIL Test)									■																			
Insensitive Munitions/Hazards testing Phase 4									■	■																		
Interceptor Delivery for FTT-13 (THAAD Intercept Flight Test)										■																		
Conduct FTT-13 (THAAD Intercept Flight Test)										■																		
Battery #2 Interceptor Deliveries Complete											■																	
THAAD Laptop Planner Design Review											■																	
GTX-04e (Full BMDS Regional Test)											■																	
GTI-04(INT) (Full BMDS HWIL V&V)										■																		
GTI-04 (EXE) (Full BMDS HWIL Test)											■	■																
Interceptor Delivery for FTT-14 (THAAD Intercept Flight Test)												■																
Conduct FTT-14 (THAAD Intercept Flight Test)												■																
Advanced Capability Development Incremental Design Review (IDR)												■																
Conduct FTT-15 (THAAD Intercept Flight Test)													■															
Update to THAAD System Spec, PIDS, ICDs														■														
															■													

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Conduct EPOCH-1 (Aegis/THAAD/Patriot Multiple Engagement Flight Test)																												
Deliver Mobile Device for Concurrent Test, Training, Operations																												
Fire Control and Comm Concurrent Test, Training and OPS (CTTO) S/W Formal Rel																												
THAAD System B2 S/W Formal Release																												
THAAD UMDF Integration S/W Rel #1																												
Link 16 Formal Rel to Enable Launch on THAAD																												
Fire Control and Comm DMeTs/NET/ET S/W Formal Rel																												
Conduct FTT-16 (THAAD Intercept Flight Test)																												
Complete Institutional Conduct of Fire trainer (ICOFT)																												
Conduct FTT-17 (THAAD Intercept Flight Test)																												
Conduct FTT-18 (THAAD Intercept Flight Test)																												
Conduct FTT-19 (THAAD Intercept Flight Test)																												
THAAD System B3 S/W Formal Release																												
Conduct EPOCH-2 (GMD/Aegis/THAAD/Patriot Multiple Engagement Flight Test)																												
Elements Requirements Verification																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
THAAD UMDF Integration S/W Rel #2																																█
Complete Institutional Training Devices																																█

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
THAAD System B1 S/W Formal Release	1	2011	1	2011
Element Weapon System Verification	1	2011	1	2011
GTX-04c (Full BMDS Distributed Test)	1	2011	1	2011
GTX-04d (Full BMDS HWIL Test)	1	2011	1	2011
Insensitive Munitions/Hazards testing Phase 4	1	2011	2	2011
Interceptor Delivery for FTT-13 (THAAD Intercept Flight Test)	2	2011	2	2011
Conduct FTT-13 (THAAD Intercept Flight Test)	2	2011	2	2011
Battery #2 Interceptor Deliveries Complete	3	2011	3	2011
THAAD Laptop Planner Design Review	3	2011	3	2011
GTX-04e (Full BMDS Regional Test)	3	2011	3	2011
GTI-04(INT) (Full BMDS HWIL V&V)	2	2011	2	2011
GTI-04 (EXE) (Full BMDS HWIL Test)	3	2011	4	2011
Interceptor Delivery for FTT-14 (THAAD Intercept Flight Test)	4	2011	4	2011
Conduct FTT-14 (THAAD Intercept Flight Test)	4	2011	4	2011
Advanced Capability Development Incremental Design Review (IDR)	4	2011	4	2011
Conduct FTT-15 (THAAD Intercept Flight Test)	2	2012	2	2012
Update to THAAD System Spec, PIDS, ICDs	3	2012	3	2012
Conduct EPOCH-1 (Aegis/THAAD/Patriot Multiple Engagement Flight Test)	4	2012	4	2012

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD07: <i>THAAD</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Deliver Mobile Device for Concurrent Test, Training, Operations	4	2012	4	2012
Fire Control and Comm Concurrent Test, Training and OPS (CTTO) S/W Formal Rel	1	2013	1	2013
THAAD System B2 S/W Formal Release	1	2013	1	2013
THAAD UMDF Integration S/W Rel #1	1	2013	1	2013
Link 16 Formal Rel to Enable Launch on THAAD	1	2013	1	2013
Fire Control and Comm DMeTs/NET/ET S/W Formal Rel	1	2013	1	2013
Conduct FTT-16 (THAAD Intercept Flight Test)	2	2013	2	2013
Complete Institutional Conduct of Fire trainer (ICOFT)	1	2014	1	2014
Conduct FTT-17 (THAAD Intercept Flight Test)	1	2014	1	2014
Conduct FTT-18 (THAAD Intercept Flight Test)	3	2014	3	2014
Conduct FTT-19 (THAAD Intercept Flight Test)	1	2015	1	2015
THAAD System B3 S/W Formal Release	1	2015	1	2015
Conduct EPOCH-2 (GMD/Aegis/THAAD/Patriot Multiple Engagement Flight Test)	3	2015	3	2015
Elements Requirements Verification	4	2015	4	2015
THAAD UMDF Integration S/W Rel #2	4	2015	4	2015
Complete Institutional Training Devices	4	2015	4	2015

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</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
WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	11.656	22.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	33.833
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

PATRIOT Advanced Capability-3 (PAC-3) is one of the most mature elements of the Ballistic Missile Defense System and is now operational with the U.S. Army. It is a land-based element built upon the proven PATRIOT air and missile defense infrastructure.

The PATRIOT Advanced Capability-3 System was deployed to the Middle East as part of Operation Iraqi Freedom where it successfully engaged several ballistic missiles.

The Army is responsible for production and further development of Advanced Capability-3 System; the Missile Defense Agency remains responsible for the Ballistic Missile Defense System interoperability and integration efforts.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Evolutionary Development Program (EDP) Task 2 See Description Below <i>FY 2009 Accomplishments:</i> FY09 WX06 PAC-3 funding was the first year of funding using this PE	11.656	21.017	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Evolutionary Development Program (EDP) Task 2 develops a capability against stressing TBM targets capability to be fielded in PDB-7 Increased BMDS effectiveness & lower tier element performance against evolving aerodynamic threats Concept and detailed requirements development underway Program plan has been implemented Additional development of Task 2 concepts Integration of code on the Modern Adjunct Processor (MAP) into the PATRIOT ECS</p> <p><i>FY 2010 Plans:</i> SW Coding, Performance Testing, Flight Testing, & Integration scheduled as part of PDB-7.0 Test & Fielding Program</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>General Support See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> Support the day to day tasking that is leveraged upon Lower Tier Project Office (LTPO) by MDA based on the Transfer and Transition Plan Annex L.</p>		0.000	1.160	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	11.656	22.177	0.000	0.000	0.000

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
• 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
• 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

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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>
• 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
• 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

The design objective of the Patriot system is to provide an element of the Ballistic Missile Defense System capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems.

E. Performance Metrics

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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			
Evolutionary Development Program (EDP) Task 2 Evolutionary Development Program WX06	Various/ Various	Multiple Multiple	11.343	21.017		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			11.343	21.017		0.000		0.000		0.000			

Remarks

NA

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			
General Support General Support WX06	C/FFP	CAS Huntsville, AL	0.000	1.160	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			0.000	1.160		0.000		0.000		0.000			

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
	11.343	22.177		0.000		0.000		0.000			

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Task 2 Follow-On PDR					█																											
Task 2 Follow-On CDR									█																							

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Task 2 Follow-On PDR	1	2010	1	2010
Task 2 Follow-On CDR	4	2010	4	2010

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</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
MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>	0.000	0.000	1.200	0.000	1.200	1.230	1.270	1.308	1.347	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

PATRIOT Advanced Capability (PAC 3) is one of the most mature elements of the Ballistic Missile Defense System and is now operational with the U.S. Army. It is a land-based element built upon the proven PATRIOT air and missile defense infrastructure.

The PATRIOT Advanced Capability-3 System was deployed to the Middle East as part of Operation Iraqi Freedom where it successfully engaged several ballistic missiles.

The Army is responsible for production and further development of Advanced Capability-3 System; the Missile Defense Agency remains responsible for the Ballistic Missile Defense System interoperability and integration efforts.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
General Support See Description Below <i>FY 2009 Accomplishments:</i> NA	0.000	0.000	1.200	0.000	1.200

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2010 Plans:</i> NA					
<i>FY 2011 Base Plans:</i> Support the day to day tasking that is leveraged upon Lower Tier Project Office (LTPO) by MDA based on the Transfer and Transition Plan ; Annex L.					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.200	0.000	1.200

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
• 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
• 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
	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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 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>
• 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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 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>
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>											
• 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
• 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

The design objective of the PATRIOT system is to provide an element of the Ballistic Missile Defense System capable of being modified to cope with the evolving threat. This strategy minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems.

E. Performance Metrics

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
General Support General Support MD06	C/FFP	CAS Huntsville, AL	0.000	0.000		1.200		0.000		1.200	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		1.200		0.000		1.200			

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD06: <i>Patriot Advanced Capability-3 (PAC-3)</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	0.000	0.000		1.200		0.000		1.200			

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</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
WX26: <i>Israeli ARROW Program</i>	93.194	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	93.194
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

A new Program Element encompassing all of MDA's U.S. Israeli cooperative programs has been created under 0603913C Israeli Cooperative.

A. Mission Description and Budget Item Justification

This project provides funding for Arrow Weapon System (AWS) development, to include the Arrow System Improvement Program (ASIP), the Arrow Missile Production Program (AMPP) for the co-production of Arrow Interceptors, the Israeli Test Bed (ITB) experiments to evaluate Human-In-The-Loop (HIL) battle management, and the Israeli Systems Architecture and Integration (ISA&I) studies to assess Israel's future 2020 Missile Defense Architecture. The Arrow Weapon System provides Israel an indigenous capability to defend against short and medium range ballistic missiles. Further, Arrow also acts as a cornerstone of the Architecture Enhancement Plan which is a joint U.S.-Israeli effort to create a combined U.S.-Israeli multi-tier Missile Defense Architecture. In addition to the geo-strategic goals of the Arrow cooperative effort, the United States derives technical benefit from its participation in these projects and gains knowledge and experience of the Israeli Defense Forces operation of a multi-layered defense architecture. U.S. participation in the Arrow development effort also ensures interoperability of the Arrow and the Israeli Missile Defense System with deployed U.S. missile defense assets. The ASIP effort will enhance the performance of the AWS to defeat longer-range and more robust ballistic missile threats expected to be introduced in the Middle East in the near future. Testing of the enhanced AWS in the U.S. against longer range threats is planned for FY 2009 to verify Arrow's improved performance and capability. Co-production will continue to increase the industrial production capacity of the Arrow II interceptor. The ITB and ISA&I efforts will continue to support AWS development as well as to define future missile defense architectures and growth paths. Finally, a new Upper Tier initiative has been started to provide Israel with additional capability against emerging regional threats.

Funding for these activities is directed by annual Congressional action.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Arrow System Improvement Program	46.900	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>				
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> Achieved Initial Operational Capability of the AWS Block 3.5 Conducted AST-13 (Arrow Block 4.0 intercept of Blue Sparrow Target) flight test in Israel Performed Arrow ground testing with U.S. BMDs Assets (JDIE 2008 #2) Conducted Caravan II flight test at U.S. test range</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>						
<p>Israeli Upper Tier</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> With emerging weapons of mass destruction threats from regional enemies, the Government of Israel has determined a need for an upper-tier BMD system to complement the current Arrow Weapon System.</p> <p>Beginning in FY 2008, the U.S. and Israel began jointly assessing solutions for an upper-tier component for Israel's Missile Defense Architecture. By adding an upper-tier capability to their current</p>		28.800	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>BMD architecture, Israel will increase the system`s capability against advanced threats. The 2008 Joint Analysis of Alternatives study showed that Israel`s proposed Upper Tier Component Interceptor (Arrow-3) could provide better performance at a lower cost than the land-based Standard Missile-3 (SM-3) interceptor if development and cost objectives are met. However, technology and schedule for Arrow-3 have been assessed by MDA as high risk. Therefore, MDA has developed detailed Knowledge Points to assess Israel`s development progress for Arrow-3.</p> <p>Negotiated new International Program Agreement for the development of Upper Tier Component Interceptor Conducted System Requirements Review for the Arrow-3 interceptor Prototype seeker`s gimbal stabilization system tested in Rotation and Vibration platforms (Knowledge Point)</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>						
<p>Arrow Missile Production Program (AMPP)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The co-manufacturing project further enhances the Arrow Weapon System by establishing a capability in the United States and the State of Israel to co-produce Arrow components and interceptors. The</p>		10.000	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>goal of the co-production effort is to accelerate production of Arrow interceptors to meet Israel's defense requirements. The current production plan will be completed in 2011 and meet the Israeli Defense Forces (IDF) current inventory requirement. However, discussions are ongoing to possibly increase these requirements and thus extend the co-production program.</p> <p>Continued Option III deliveries</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>						
<p>Israeli Test Bed (ITB)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Israeli Test Bed (ITB) is a cooperative effort conducted under the 30 March 1989 Theater Ballistic Missile Defense Test Bed Memorandum of Agreement between the U.S. and Israel. The ITB is a large scale human-in-the-loop (HIL) modeling and simulation facility for the purpose of developing, analyzing, and evaluating candidate architectures, battle management concepts, and engagement algorithms. Many of the exercises accomplished on the ITB include participation of U.S. and Israel warfighters. The principal ITB facility resides at Holon, Israel. A second ITB capability is operational at the Missile Defense Agency's Advanced Research Center in Huntsville, Alabama.</p>		3.535	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Accomplished 3 experiments refining HIL tools for Command and Control, developing regional defense architectures, and impacts to tactics, techniques and procedures of the combined U.S.-Israeli Multi-tier Missile Defense Architecture.</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>						
<p>Israeli Systems Architecture and Integration (ISA&I)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Israeli Systems Architecture and Integration (ISA&I) Study provides analyses of the future 2020 Israeli Missile Defense Architecture, growth paths for future development and interoperability with U.S. BMDS assets. Program objectives are to assess the ballistic missile threats, provide analyses and architecture options, assess missile defense system robustness and issues, and assess Israeli and U.S. missile defense interoperability issues. The ISA&I effort is contracted by MDA to an Israeli consulting firm.</p> <p>Continued studies on emerging regional ballistic missile threats, growth path options for the Israeli Missile Defense Architecture and evaluate Israeli and U.S. missile defense systems interoperability.</p>		3.517	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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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 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Program Support See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program support task encompasses activities that support, but are not part of, the U.S./Israeli cooperative programs. These activities include the documentation of foreground and background data rights for ASIP, ITB, ADP, and legacy programs; security support to include development and maintenance of security plans and classification guides; and analysis and engineering support of the ISA&I and ITB programs. It also provides for contractor support and expertise in support of the Program Element Monitor. ;</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>	0.442	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Accomplishments/Planned Programs Subtotals	93.194	0.000	0.000	0.000	0.000

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
• 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
• 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

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
• 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
	0.000	0.000	111.671	0.000	111.671	103.636	123.591	103.668	58.773	0	501.339

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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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 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>
• 0604884C: <i>AIRBORNE INFRARED (ABIR)</i>											
• 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

As a bi-lateral cooperative program with the State of Israel, the Arrow Program does not follow normal DoD Acquisition Practices. The program is managed by an Israeli Co-Program Manager and, equal in responsibility, an U.S. Co-Program Manager. Program funding is equitable between the U.S. and Israel with Israel providing matching funds. However, a portion of the Israeli cost share is from non-financial contributions such as background information and facilities. With ASIP, Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to IAI and other ASIP contractors. MDA Targets Office contracts for production and instrumentation of targets for U.S. flight testing. Additionally with Arrow Missile Production, IMoD contracts on behalf of U.S. government to IAI. IAI then subcontracts to Boeing for manufacture of U.S. components. IAI manufactures Israeli components and performs final assembly. For the Israeli Test Bed, MDA contracts directly with Tadiran while IMoD provides their share of the funding to U.S. Finally, MDA contracts directly with WALES, Ltd for the Israeli System Architecture and Integration.

E. Performance Metrics

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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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			
Arrow System Improvement Program ASIP WX26	TBD/CPFF	IAI Israel	105.760	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Israeli Upper Tier Arrow Upper Tier WX26	TBD/CPFF	IAI Israel	48.260	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Arrow Missile Production Program (AMPP) Arrow Missile Production WX26	TBD/FFP	IAI & Boeing Israel & AL	45.104	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Israeli Test Bed (ITB) Israeli Test Bed WX26	TBD/FFP	Tadiran Israel	7.070	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Israeli Systems Architecture and Integration (ISA&I) ISA&I WX26	TBD/FFP	Wales, LTD Israel	4.384	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Support Program Support WX26	TBD/FFP	Various Various	1.156	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			211.734	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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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			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	211.734	0.000	0.000	0.000	0.000			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Interoperability Test (JDIE08)			■																									
Arrow System Test 13 in Israel			■																									
Enhanced Arrow Test in U.S.			■																									
Arrow 3 Seeker Stabilization KP			■																									
Arrow-3 SRR			■																									
Israeli Test Bed Experiment-1Q2009	■																											
Israeli Test Bed Experiment-2Q2009		■																										
Israeli Test Bed Experiment-4Q2009				■																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX26: <i>Israeli ARROW Program</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Interoperability Test (JDIE08)	3	2009	3	2009
Arrow System Test 13 in Israel	3	2009	3	2009
Enhanced Arrow Test in U.S.	3	2009	3	2009
Arrow 3 Seeker Stabilization KP	3	2009	3	2009
Arrow-3 SRR	3	2009	3	2009
Israeli Test Bed Experiment-1Q2009	1	2009	1	2009
Israeli Test Bed Experiment-2Q2009	2	2009	2	2009
Israeli Test Bed Experiment-4Q2009	4	2009	4	2009

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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>				WX34: <i>Short Range Ballistic Missile Defense</i>			
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>WX34: Short Range Ballistic Missile Defense</i>	70.786	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	70.786
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

A new Program Element encompassing all of MDA's U.S. Israeli cooperative programs has been created under 0603913C Israeli Cooperative.

A. Mission Description and Budget Item Justification

The 2006 summer conflict between Israel and Hezbollah underscored the strategic effect of short-range, inexpensive ballistic missiles attacks on civilian populations. The current Israeli Missile Defense Architecture (comprised of PATRIOT and Arrow) has capability against some of these short-range missile threats, but does not provide a cost-effective defense. The goal of the Israeli SRBMD program is to provide an affordable defense capability. In March 2005, the U.S. and Israel initiated a joint 18-month feasibility study of a low-cost SRBMD capability as a compliment to the Arrow Weapon System. This was followed in May 2006 by Israeli's down selection to the David's Sling Weapon System (DSWS) for their SRBMD solution. While currently there is no U.S. requirement for a SRBMD system MDA plans to influence specifications and development decisions to ensure the system could be suitable for potential future U.S. needs and interoperable with the U.S. Ballistic Missile Defense System (BMDS). The system is to be developed in development blocks with the initial block providing a baseline capability against long range rockets and short range ballistic missiles.

Under the U.S.-Israeli Project Agreement signed in September 2008, the project is jointly managed by the U.S. Missile Defense Agency and the Israeli Missile Defense Organization. The agreement documents the U.S.-Israeli cost share, in which the development costs are equitable between the U.S. and Israel with Israel providing matching funds. However a portion of the Israeli cost share is from non-financial contributions such as background information and facilities.

Funding for these activities is directed by annual Congressional action.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
SRBMD Program	70.786	0.000	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
See Description Below					
<i>FY 2009 Accomplishments:</i> Completed DSWS Block 1 System and Sub-System Preliminary Design Reviews Completed controlled navigation fly-out test of the booster					
<i>FY 2010 Plans:</i> NA					
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	70.786	0.000	0.000	0.000	0.000

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
• 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
• 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
	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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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 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>
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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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>
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>											
• 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
• 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

As a bi-lateral cooperative program with the State of Israel, the SRBMD program does not follow normal DoD Acquisition Practices. The program is managed through a joint program office led by an Israeli Co-Program Manager and, equal in responsibility, an U.S. Co-Program Manager. Program funding is equitable between the U.S. and Israel with Israel providing matching funds. However, a portion of the Israeli cost share is from non-financial contributions such as background information and facilities. With the David Sling Weapon System, Israel Ministry of Defense (IMoD) contracts on behalf of U.S. government to Rafael and other David's Sling Weapon

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
System contractors. A Short Range Ballistic Missile Defense Project Agreement under the RDT&E Framework agreement between U.S. and Israel was signed Sept 2008.		
E. Performance Metrics NA		

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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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			
SRBMD Program SRBMD Program WX34	TBD/CPFF	Rafael Israel	109.021	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			109.021	0.000		0.000		0.000		0.000			

Remarks
NA

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			
SRBMD Program SRBMD Program WX34	TBD/CPFF	Rafael Israel	109.021	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			109.021	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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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			
SRBMD Program SRBMD Program WX34	TBD/CPFF	Rafael Israel	109.021	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			109.021	0.000		0.000		0.000		0.000			

Remarks

NA

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			
SRBMD Program SRBMD Program WX34	TBD/CPFF	Rafael Israel	109.021	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			109.021	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			
Project Cost Totals	436.084	0.000		0.000		0.000		0.000			

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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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
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Remarks NA	
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Exhibit R-4, RDT&E Schedule Profile: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Interceptor Flyout		■																										
Preliminary Design Review		■																										

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Exhibit R-4A, RDT&E Schedule Details: 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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT WX34: <i>Short Range Ballistic Missile Defense</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Interceptor Flyout	2	2009	2	2009
Preliminary Design Review	2	2009	2	2009

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</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>	25.048	31.721	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	56.769
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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	25.048	31.721	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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	25.048	31.721	0.000	0.000	0.000

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
• 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
• 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

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 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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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>				PROJECT MD40: <i>Program-Wide Support</i>				
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	
MD40: <i>Program-Wide Support</i>	0.000	0.000	14.819	0.000	14.819	8.868	11.177	21.731	21.682	Continuing	Continuing	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0			
Note In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11												
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> NA <i>FY 2010 Plans:</i> NA						0.000	0.000	14.819	0.000	14.819		

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD40: <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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	14.819	0.000	14.819

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
• 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
• 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

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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 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

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

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</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	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	Continuing	Continuing
AX08: <i>Ground Based Midcourse Defense (GMD) Block 1.0</i>	32.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	32.130
CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>	1,112.792	810.518	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	1,923.310
WX08: <i>GM Capability Development</i>	0.000	3.834	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	3.834
XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>	249.519	194.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	443.816
MD08: <i>Ground Based Midcourse</i>	0.000	0.000	1,300.655	0.000	1,300.655	1,071.957	1,249.802	1,064.572	996.981	Continuing	Continuing
ZX40: <i>Program-Wide Support</i>	78.242	18.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	96.964
MD40: <i>Program-Wide Support</i>	0.000	0.000	45.526	0.000	45.526	40.698	41.988	34.457	36.232	Continuing	Continuing

Note

The Fiscal Year 2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated Ballistic Missile Defense System architecture to counter existing regional threats, continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities -- weapons, sensors, and Command and Control Battle Management and Communications. A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated Ballistic Missile Defense capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile's location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack -- all connected by a unifying Command & Control, Battle Management and Communications system. As a result, an effort funded in a Program Element may be critical to the success of efforts in the other Program Elements -- we refer to these connections as "interdependencies". Throughout the budget justification materials we have attempted to highlight interdependencies in order to fully explain the relationship between different parts of the proposed program.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>
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In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the Fiscal Year 2009-Fiscal Year 2010 budget submissions are now captured in Project MD08 for Fiscal Year 2011 - 2015.

A. Mission Description and Budget Item Justification

To counter the Intercontinental Ballistic Missile and Intermediate Range Ballistic Missile threat, the United States deploys Ground-Based Midcourse Defense (GMD) interceptors in silos at Fort Greely, Alaska (FGA) and Vandenberg Air Force Base, California (VAFB) to defend our Homeland from Intercontinental Ballistic Missiles or Intermediate Range Ballistic Missile attack. In Fiscal Year 2010, we will continue the development of long-range Ground-based Midcourse Defense capabilities with missile fields at Fort Greely, Alaska and Vandenberg Air Force Base, where we will maintain 26 and four Ground-Based Interceptors (GBI), respectively. This work will improve protection of the United States against a limited number of rogue state launches of Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles. Given the small inventory of long-range ballistic missiles deployed by rogue states, thirty highly-ready Ground Based Interceptors in hardened silos will provide the United States substantial fire power.

Ballistic Missile Defense Systems engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test Ballistic Missile Defense System components. These products optimize performance at the system level and further ensure that the assessment of the designed Ballistic Missile Defense System is based on sufficient flight tests, ground tests, modeling and simulation, and engineering analysis. Compliance of Ground Based Midcourse Defense to Ballistic Missile Defense System level requirements is monitored in a series of requirements and design reviews both at the system and element levels.

The Ground Based Midcourse Defense capability requires quality of service from other Ballistic Missile Defense System elements such as Sensors, Aegis, and Command & Control, Battle Management and Communications to enable successful ballistic missile engagements to protect the U.S. Homeland. This includes the following data: accurate object location tracks and classification/discrimination from radar sources such as Sea-Based X-Band radar and Upgraded Early Warning Radars (UEWR) at Beale, Fylingdales, and Thule. Also on forward deployed radars such as Army Navy/Transportable Radar Surveillance and Aegis, object location track information is required from Command & Control, Battle Management and Communications which provides additional time for the Warfighter to plan defense engagements.

Missile Defense Agency has a set of Unifying Missile Defense Functions, which increase the effectiveness of the Ballistic Missile Defense System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of Missile Defense Agency developed capabilities. These Unified Missile Defense Functions efforts are Sensor Registration (reporting of sensor errors / biases), Correlation

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>
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(ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). Unified Missile Defense Functions are implemented across the Ballistic Missile Defense System elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.

Common Threat Engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense System and sub-system concept and requirements, design, verification, and assessment. Common threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives Ballistic Missile Defense System ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also used to develop the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specification.

Modeling and simulation (M&S) activities support all phases of Ground Based Midcourse Defense development, including development of modifications to the Ground Systems and Ground Based Interceptor development, flight test missions, ground tests, war-games, exercises, and performance assessment. Models and simulations are tailored to the specific need of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definition studies, to high-fidelity models used to support engineering development, or testing and are integrated into the Ballistic Missile Defense Digital Simulations Architecture. Digital simulations support Performance Assessment events, which provide critical system level performance data relative to all elements, the system engineer, Models and Simulations developers, Operational Test Agency (OTA) and the Warfighter. Further, the Models and Simulations digital tools are accredited for each application and for specific objectives; tools are put through a rigorous verification and validation process, reviewing coding and specifications, and comparing analyses against actual flight test results. Planning support is required to assist in the V&V plan development, test execution, analysis for Verification and Validation (V&V) reports and program office Models and Simulations certification. The Digital End-to-End simulation of the Ballistic Missile Defense System requires a Performance Assessment (PA) Integrated Verification & Validation (V&V) Plan and Report (at both element and system level), and a PA-system level Accreditation Plan and Report.

Ground Based Midcourse Defense Element consists of a complex communications system, fire control capability, and ground-based interceptors. The Ground Based Midcourse Defense element is a key component of the Ballistic Missile Defense System, providing Combatant Commanders capability to engage ballistic missiles in the midcourse phase of flight. This phase, compared to boost or terminal, allows significant time for sensor viewing from multiple platforms and thus provides multiple engagement opportunities for hit-to-kill interceptors. Ground Based Midcourse Defense provides the capability to engage and destroy long-range threats in the midcourse battle space to protect the U.S. Homeland.

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>
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The Ground Based Midcourse Defense program is described as follows:

Ground Based Midcourse Defense capability consists of communications systems, fire control capabilities, and ground-based interceptors. We will continue the development and fielding of the Ground Based Midcourse Defense capability to defend the U.S. against a limited number of rogue state launches of Intermediate-Range Ballistic Missiles and Intercontinental Ballistic Missiles.

To prove the Ground Based Midcourse Defense capability works, we will execute a rigorous test program that includes expanding our flight and ground test programs to test our capability against intermediate and long-range threats to build the confidence of U.S. and allied stakeholders in the Ballistic Missile Defense System, bolster deterrence against their use, and send a powerful message to potential adversaries looking to acquire ballistic missiles.

We will continue to provide for the operations and sustainment of Ground Based Midcourse Defense fielded capability at Fort Greely, Alaska, Vandenberg Air Force Base, the Missile Defense Integration Operations Center (MDIOC), and across the nation-wide Ground Based Midcourse Defense Communications Network.

Ground Based Midcourse Defense will pursue a competitive Development and Sustainment Contract (DSC) for future development; fielding; test; systems engineering, integration and configuration management; equipment manufacturing and refurbishment; training; and operations and sustainment support for the Ground Based Midcourse Defense system and associated support facilities.

We will continue execution of a lifecycle management plan to sustain the Ground Based Midcourse Defense system through 2030 and beyond. To increase reliability of the Ground Based Interceptor fleet we will rotate newer Ground Based Interceptors into operational fleet and refurbish older Ground Based Interceptors for flight testing and operational spares.

To improve the reliability of Ground Based Midcourse Defense Ground Systems, we will execute an obsolescence and technology refresh program for Ground Systems components to mitigate obsolescence issues.

To improve the reliability of Ground Based Midcourse Defense Ground Systems, we will complete Missile Field 2 (MF2) at Fort Greely, Alaska and plan for the decommissioning of Missile Field 1 (MF1). We will execute an obsolescence and technology refresh program for Ground Systems components to mitigate obsolescence issues.

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i>	PE 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>
BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	

B. Program Change Summary (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	1,507.481	982.922	0.000	0.000	0.000
Current President's Budget	1,472.683	1,027.371	1,346.181	0.000	1,346.181
Total Adjustments	-34.798	44.449	1,346.181	0.000	1,346.181
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		44.449			
• Congressional Directed Transfers		0.000			
• Reprogrammings	7.290	0.000			
• SBIR/STTR Transfer	-22.088	0.000			
• Other Adjustment Detail	-20.000	0.000	1,346.181	0.000	1,346.181

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: CX08: *Ground Based Midcourse Defense (GMD) Block 3.0*

Congressional Add: *GMD Upgrades and Enhancements*

Congressional Add: *GBI Vendor Base Sustainment*

Congressional Add Subtotals for Project: CX08

Congressional Add Totals for all Projects

	FY 2009	FY 2010
	40.000	0.000
	0.000	50.000
	40.000	50.000
	40.000	50.000

Change Summary Explanation

Fiscal Year 2009 decrease includes Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR) transfer of \$22M and \$20M of ``Other Adjustment`` by the Office of the Secretary of Defense (OSD).

Fiscal Year 2009 increases include \$7.29 M in Missile Defense Agency Reprogramming and \$40 M in Congressional Adds for Ground Based Midcourse Defense Upgrades and Enhancements.

No Fiscal Year 2011 data provided in PB10.

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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				AX08: <i>Ground Based Midcourse Defense (GMD) Block 1.0</i>			
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>AX08: Ground Based Midcourse Defense (GMD) Block 1.0</i>	32.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	32.130
Quantity of RDT&E Articles	7	2	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the FY 2009-FY 2010 budget submissions are now captured in Project MD08 for FY2011 - 2015.

A. Mission Description and Budget Item Justification

Project AX08 provides funding for the development and fielding of additional assets and capability enhancements to the Ground Based Midcourse Program. These enhancements and activities include:

- Program is still delivering assets up to the 30th Ground Based Interceptor (with associated ground hardware), five In-Flight Interceptor Communication System (IFICS) Data Terminals (IDTs), and three Ground Based Midcourse Defense Fire Control nodes
- Developed and fielded the Capability Enhancement-II (CE-II) kill vehicle, which addresses obsolescence issues and provides additional processor throughput to support system-wide discrimination capabilities
- Upgraded Ground Systems hardware, software, and communications links that will include improvements for the Warfighter, strong authentication, booster drop avoidance, simultaneous test and operations upgrades, and hardware upgrades to begin addressing obsolescence issues
- Provided capability to conduct simultaneous test and operations of the Ground Based Midcourse Defense element
- Completed integration and testing of sensors including Upgraded Early Warning Radars (UEWRs) at Beale AFB and Fylingdales, U.K., the Cobra Dane radar at Shemya, AK, and the Sea-Based X-Band Radar

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Ground Systems	24.415	0.000	0.000	0.000	0.000

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT AX08: <i>Ground Based Midcourse Defense (GMD) Block 1.0</i>
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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 Ground Based Midcourse Defense Ground Systems Component enables control and operation of the Ground Based Midcourse Defense Element as part of the Ballistic Missile Defense System. Ground Systems consists of the Ground Based Midcourse Defense ; Fire Control, Test Exerciser, External Systems Interface (ESI), Ground Based Midcourse Defense ; Communications Network (Ground Based Midcourse Defense Communications Network), In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT), Launch Site Components (LSC) (silos, Silo Interface Vaults (SIVs)), Launch Support Systems (LSS) (Command Launch Equipment (Command Launch Equipment) and Launch Support Equipment (LSE)).</p> <p>Expanded and Improved Ground Systems capabilities</p> <p>Completed fielding of Ground Based Midcourse Defense ; Fire Control software version 6B which improved fault detection and isolation, and added ability to designate first stage booster drop exclusion zones</p> <p>Initiated fielding of Command Launch Equipment hardware and software version 4.1 to mitigate obsolescence and support an increased number of Ground Based Interceptors</p> <p>Completed fielding, integration, and testing of Ground Based Midcourse Defense Simultaneous Test and Operations (STO) Phase II upgrades to accommodate initial STO</p> <p>Completed Installation and Check-Out of 4th Operational Silo at Vandenberg Air Force Base with additional capability to support Flight Test</p> <p><i>FY 2010 Plans:</i> Planned program found in Project CX08.</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 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Ground Based Interceptor</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Ground Based Interceptor program continues the development of Capability Enhancement-II (CE-II) Exoatmospheric Kill Vehicle (Exoatmospheric Kill Vehicle) and booster technologies. The CE-II Exoatmospheric Kill Vehicle will be demonstrated as part of the improvement process in both the ground and flight test programs. This enhancement addresses Exoatmospheric Kill Vehicle obsolescence issues and provides additional processor throughput to support system wide advanced discrimination capabilities. Ultimately the program will end with 30 3-stage configuration Ground Based Interceptors fielded. Development of this capability will enable the U.S. to defend itself from limited North Korean long-range threats.</p> <p>Expanded and improved interceptor fleet:</p> <p>Completed acquisition of four Ground Based Interceptors, and continue acquisition of two Ground Based Interceptors (Fielding) Completed acquisition of one Ground Based Interceptor (Flight Test)</p> <p><i>FY 2010 Plans:</i> Complete delivery of final two Ground Based Interceptors (Fielding)</p>				1.876	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 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>BMDS Level Testing</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Ground Based Midcourse Defense Test and Evaluation plans and executes ground and flight tests to evaluate and verify Ground Based Midcourse Defense system performance and collect data to anchor models and simulations. Ground Based Midcourse Defense Test and Evaluation uses significant test infrastructure (ground-test facilities, ranges, sensors and instrumentation resources) to support measurement of system performance for all Ground Based Midcourse Defense element components. Ground Based Midcourse Defense Test and Evaluation integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, minimizes the duplication of test resources and the time required to execute required testing, and supports Ballistic Missile Defense System level test and evaluation.</p> <p>At the end of Fiscal Year 2009, the Critical Engagement Conditions/Empirical Measurement Events (CEC/EME)** data necessary to validation, verification, and accreditation of modeling and simulation was 8% complete</p> <p>Completed Flight Test Ground Based Midcourse DefenseD-05 in Dec 2008; this test demonstrated the engagement of a target launched from Kodiak Launch Complex by a Ground Based Interceptor launched from Vandenberg Air Force Base; the Exoatmospheric Kill Vehicle successfully intercepted the target</p>				5.839	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>Completed Ground Test Distributed-03 in March 2009; this distributed ground test demonstrated Ballistic Missile Defense System capabilities with fielded assets and operational Ballistic Missile Defense System tactical communications</p> <p>Participated in Ground Test Focused-03c, the final, focused system-level assessment of element capabilities of the Ground Test-03 Campaign Hardware-in-the-Loop (Hardware-In-The-Loop) Test Events; Ground Test Focused-03c used the Integrated Ground Test (Ground Test Integrated-03) baseline test configuration to resolve issues encountered during previous Ground Test-03 Campaign Hardware-In-The-Loop Test Events</p> <p>** Critical Engagement Conditions / Empirical Measurement Event (CEC/EME) are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations.</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>					
Accomplishments/Planned Programs Subtotals	32.130	0.000	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)

<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>
• 0603881C: <i>Ballistic Missile Defense Terminal Defense Segment</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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 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>
• 0603904C: <i>MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)</i>											
• 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

The Ground Based Midcourse Defense program will continue to follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, development, and evolutionary acquisition through incremental development. The Agency has structured the missile defense acquisition strategy to continually provide needed upgrades to the Ground Based Midcourse Defense system components within authorized funding availability. This process minimizes the risk of obsolescence, provides opportunities for standards updates, and allows decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities. Beginning in Fiscal Year 2011 and for the remainder of the program life cycle, Ground Based Midcourse Defense will incorporate tenets of competitive procurement in the acquisition strategy for all feasible elements of the weapons system. This competition based developmental approach will be enhanced within the Ground Based Midcourse Defense (GMD) program by additional test infrastructure, improved test management, and improved models and simulations that enhance GMD's ability to test in more complex and operationally realistic test environments earlier than the standard acquisition process.

Additionally, Missile Defense Agency will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an Missile Defense Agency enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System mission. The objectives are to implement national engineering and support services for the Ballistic Missile Defense System mission across the Missile Defense Agency enterprise and Ground Based Midcourse Defense , 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 for Ground Based Midcourse Defense will include engineering and technical services; studies, analyses, and evaluation; and management and professional services.

E. Performance Metrics

NA

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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			
Ground Systems Ground Systems AX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	176.946	0.000		0.000		0.000		0.000	0	176.946	Continuing
Ground Based Interceptor Ground Based Interceptor AX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/UT/VA	276.150	0.000		0.000		0.000		0.000	0	276.150	Continuing
Subtotal			453.096	0.000		0.000		0.000		0.000	0.000	453.096	

Remarks

NA

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			
Ground Systems Ground Systems-1 AX08	TBD/TBD	MITRE AL	0.324	0.000		0.000		0.000		0.000	0	0.324	Continuing
Ground Systems Ground Systems-2 AX08	C/FP	TSI AL	2.277	0.000		0.000		0.000		0.000	0	2.277	Continuing
Ground Systems Ground Systems-3 AX08	C/CPFF	CSC AL	4.639	0.000		0.000		0.000		0.000	0	4.639	Continuing
Ground Systems Ground Systems-4 AX08	TBD/TBD	USACE AL	0.810	0.000		0.000		0.000		0.000	0	0.810	Continuing

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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			
Ground Systems Ground Systems-5 AX08	TBD/TBD	AMRDEC AL	0.540	0.000		0.000		0.000		0.000	0	0.540	Continuing
Ground Systems Ground Systems-6 AX08	C/CPFF	L3 Communications AL	0.893	0.000		0.000		0.000		0.000	0	0.893	Continuing
Ground Systems Ground Systems-7 AX08	C/CPFF	TSI AL	0.664	0.000		0.000		0.000		0.000	0	0.664	Continuing
Ground Systems SPT HSV AX08	C/CPAF	CSC AL	4.484	0.000		0.000		0.000		0.000	0	4.484	Continuing
Ground Based Interceptor Ground Based Interceptor-1 AX08	SS/FP	BAE Systems AL	3.037	0.000		0.000		0.000		0.000	0	3.037	Continuing
Ground Based Interceptor Ground Based Interceptor-2 AX08	SS/FP	TSI AL	0.740	0.000		0.000		0.000		0.000	0	0.740	Continuing
Ground Based Interceptor Ground Based Interceptor-3 AX08	TBD/TBD	AMCOM AL	0.557	0.000		0.000		0.000		0.000	0	0.557	Continuing
Ground Based Interceptor Ground Based Interceptor-4 AX08	TBD/TBD	Various Various	0.010	0.000		0.000		0.000		0.000	0	0.010	Continuing
Subtotal			18.975	0.000		0.000		0.000		0.000	0.000	18.975	

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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			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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

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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
Project Cost Totals	472.071	0.000	0.000	0.000	0.000	0.000	472.071	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT AX08: <i>Ground Based Midcourse Defense (GMD) Block 1.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Ground Based Interceptors 25-26	■																											
Flight Test GMD-05 (Ground Based Midcourse Defense Intercept Flight Test)	■																											
Ground Test Focused-03c (Full BMDS Distributed Test)	■																											
Flight Test GMD-05 Ground Based Interceptor	■																											
Ground Test Distributed-03 (Full BMDS Distributed Test)		■																										
Vandenberg Air Force Base 4th Operational Silo		■																										
Ground Based Midcourse Defense Fire Control 6B.1/CLE 4.1				■																								
Ground Based Interceptors 27-30				■	■	■																						

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT AX08: <i>Ground Based Midcourse Defense (GMD) Block 1.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Ground Based Interceptors 25-26	1	2009	1	2009
Flight Test GMD-05 (Ground Based Midcourse Defense Intercept Flight Test)	1	2009	1	2009
Ground Test Focused-03c (Full BMDS Distributed Test)	1	2009	1	2009
Flight Test GMD-05 Ground Based Interceptor	1	2009	1	2009
Ground Test Distributed-03 (Full BMDS Distributed Test)	2	2009	2	2009
Vandenberg Air Force Base 4th Operational Silo	2	2009	2	2009
Ground Based Midcourse Defense Fire Control 6B.1/CLE 4.1	4	2009	4	2009
Ground Based Interceptors 27-30	4	2009	2	2010

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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>			
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
CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>	1,112.792	810.518	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	1,923.310
Quantity of RDT&E Articles	3	8	0	0	0	0	0	0	0		

Note

Fiscal Year 2009 requirements included Ground Based Interceptors 42 and 44 being reallocated for acceleration of the 2-stage Ground Based Interceptor flight test program. [European Capability Program Element (0603911C) and Ballistic Missile Defense European Interceptor Site Program Element (0603908C)] These Ground Based Interceptors became interceptors for Booster Verification Test (BVT-01) with Exoatmospheric Kill Vehicle (EKV) and Flight Test (FTG-10). However, Fiscal Year 2010 reflects a change to this requirement due to program restructuring.

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the Fiscal Year 2009-Fiscal Year 2010 budget submissions are now captured in Project MD08 for Fiscal Year 2011 - 2015.

A. Mission Description and Budget Item Justification

Project CX08 provides funding for the development and fielding of incremental component capability enhancements to Project AX08.

These enhancements include:

- Continue acquisition of 14 Ground Based Interceptors for fielding at Fort Greely, Alaska or Vandenberg Air Force Base to replace older fielded Ground Based Interceptors
- Continue refurbishment of older fielded Ground Based Interceptors
- Continue development of software upgrades for Ground Systems and the Ground Based Interceptor
- Continue fabrication of Launch Site Components for Missile Field-2
- Continue integration of first seven silos for Missile Field-2 and Missile Field-2 Mechanical Electrical Building (MEB)
- Continue Flight Test Program
- Continue support to Ballistic Missile Defense System level ground testing

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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Continue models and simulations to verify system performance; supports the Ballistic Missile Defense System Hardware-In-The-Loop (HWIL) Modeling and Simulation Program, which provides and integrates the Ballistic Missile Defense System system-level Hardware-In-The-Loop stimulation framework to support full-envelope Ballistic Missile Defense System ground test, flight test, and training events based upon Agency and Warfighter needs

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Ground Systems See Description Below <i>FY 2009 Accomplishments:</i> The Ground Based Midcourse Defense Ground Systems enable control and operation of the Ground Based Midcourse Defense Element as part of the Ballistic Missile Defense System. Ground Systems consists of the Ground Based Midcourse Defense Fire Control, Test Exerciser, and External Systems Interface (ESI), Ground Based Midcourse Defense Communications Network (Ground Based Midcourse Defense Communications Network), In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT), Launch Site Components (LSC) (silos, SIVs), and Launch Support Systems (LSS) (Command Launch Equipment (Command Launch Equipment) and Launch Support Equipment (LSE)). Expanded and improved ground systems capabilities: Initiated development needed to support transition of the Ground Based Midcourse Defense Communications Network Long Haul Communications to the Defense Information Systems Agency (Defense Information Systems Agency) Completed the Long Haul Communications Transport (Long Haul Communications-T) Design Review, Deployment Readiness Review (DRR), and Test Readiness Review (TRR) and began fielding Defense Information Systems Agency hardware for Long Haul Communications-T	193.384	91.385	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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Fielded a third network environment which provided the communications network to enable the Ground Based Midcourse Defense system to conduct simultaneous test (flight or ground), operations and development</p> <p>Fielded the second Relocatable IDT at Vandenberg Air Force Base providing the ability to conduct simultaneous test and ops at Vandenberg Air Force Base missile field</p> <p>Completed fielding of software build 6B.1 for Fire Control which provides capabilities for simultaneous flight test operations, improved correlation fusion multiple sensors, and 1st stage debris management</p> <p>Completed fabrication of ten (10) Launch Site Components for Missile Field-2</p> <p>Continued integration of Missile Field-2 at Fort Greely, Alaska</p> <p>Continued the Fort Greely Future Power Plant</p> <p><i>FY 2010 Plans:</i> Continue improvement of Ground Systems capabilities:</p> <p>Modify and upgrade Ground Systems 6B suite of products to integrate additional forward based radars (6B.1.5) from Sensors's Army Navy/Transportable Radar Surveillance radars, software builds for Ground Based Midcourse Defense to provide Command & Control, Battle Management and Communications essential elements of information, 2-stage interceptor capability, Sea Based X-Band Radar-Interceptor Data Terminal dynamic positioning, Warfighter requested changes, and Fort Greely, Alaska Missile Field-2 support (6B.2 & Command Launch Equipment 4.3)</p> <p>Complete the Fort Greely Future Power Plant</p> <p>Develop software builds for continued support of the Flight Test capability</p> <p>Continue development needed to support transition of the Ground Based Midcourse Defense Communications Network Long Haul Communications to Defense Information Systems Agency</p> <p>Continue integration of first seven silos for Missile Field-2 and Missile Field-2 Mechanical Electrical Building (MEB)</p> <p>Continue storage of missile field hardware</p>					

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>		PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Complete fielding of Command Launch Equipment hardware and software to mitigate obsolescence and support an increased number of Ground Based Interceptors</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>BMDS Level Testing</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Missile Defense Agency Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting Ballistic Missile Defense System level testing. Ground Based Midcourse Defense Element level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This Program Element also provides Ground Based Midcourse Defense participation in the consolidated Missile Defense Agency-wide System Test Program and the resources for the, planning, design, execution, and management of Ground Based Midcourse Defense in Ballistic Missile Defense System testing in accordance with the Ballistic Missile Defense System Test Policy, Missile Defense Agency Directive 3202.03 (January 2009).</p> <p>Ground Based Midcourse Defense Test and Evaluation plans and executes rigorous ground and flight tests to evaluate and verify Ground Based Midcourse Defense system performance and collect data to anchor models and simulations. Ground Based Midcourse Defense Test and Evaluation uses significant test infrastructure (ground-test facilities, ranges, sensors and instrumentation resources) to support measurement of system performance for all Ground Based Midcourse Defense element</p>				149.483	85.284	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>components. Ground Based Midcourse Defense ; Test and Evaluation integrates developmental and operational test planning, shares test resources, collects and assesses test data, collectively resolves test issues, minimizes the duplication of test resources and the time required to execute required testing, and supports Ballistic Missile Defense System level test and evaluation.</p> <p>Continued to test Ground Based Midcourse Defense ;capabilities:</p> <p>Conducted planning and pre-mission integration for Flight Test Ground Based Midcourse DefenseD-06, with Sea Based X-Band Radar using a Ground Based Interceptor launch from Vandenberg Air Force Base against a target launched from Reagan Test Site; launch rescheduled for 2QFiscal Year 2010</p> <p>Conducted planning for the Ground Test-04 Ballistic Missile Defense System Ground Test Series to assess Ballistic Missile Defense System capabilities with fielded assets and operational Ballistic Missile Defense System tactical communications</p> <p>Participated in Northern Command requested strategic focused test events (Fast Shield II and Ground Test Focused-03e) to assess Ballistic Missile Defense System capabilities, Warfighter Tactics, Techniques, and Procedures (TTPs) against updated Intercontinental Ballistic Missile Models</p> <p><i>FY 2010 Plans:</i></p> <p>At the end of Fiscal Year 2010, the Critical Engagement Conditions / Empirical Measurement Event (CEC/EME)** data necessary to validation, verification, and accreditation of modeling and simulations is projected to increase from 18% to 44% complete</p> <p>Participate in Booster Verification Test-01 (For reference: event executed under Program Element 0603911C)</p> <p>First time event for flying a 2-stage Ground Based Interceptor, performing Exoatmospheric Kill Vehicle separation from a 2-stage booster and delivering an Exoatmospheric Kill Vehicle to its insertion point</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>Collect Critical Engagement Conditions / Empirical Measurement Event data necessary for validation, verification, and accreditation of modeling and simulation applications in the following areas: solar modeling and potential effects on intercepts, Exoatmospheric Kill Vehicle divert system performance, Exoatmospheric Kill Vehicle performance and maneuverability when reentering the atmosphere and 2-stage interceptor performance</p> <p>Support execution of Ballistic Missile Defense System Ground Test-04 test campaign to assess Ballistic Missile Defense System capabilities</p> <p>Demonstrate Ground Based Midcourse Defense Fire Control 6B.1.5 which includes quality of service from Sensors and Ballistic Missile Defense Command & Control, Battle Management and Communications for track inputs from two Army Navy/Transportable Radar Surveillance radars and correlation of multi-sensor tracks from Command & Control, Battle Management and Communications</p> <p>Conduct System Post-Flight Reconstruction using flight test data to assist in validation and updates of models and simulations</p> <p>** Critical Engagement Conditions / Empirical Measurement Event (CEC/EME) are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Program Management See Description Below</p>		190.948	184.580	0.000	0.000	0.000

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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
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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> This effort provides for the prime contractor and government management of the Ground Based Midcourse Defense program. Included in this effort is program and business management, program administration, technical and testing oversight, subcontractor management, verification of hardware and software development, quality/safety/mission assurance, integrated logistic support, and government manpower and infrastructure to develop, test and sustain the Ground Based Midcourse Defense system and components.</p> <p>Provided government and contractor program staff and infrastructure for the overall management of the Ground Based Midcourse Defense program Provided technical and business management support activities, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management and integration activities Provided contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight Ensured Ground Based Midcourse Defense program compliance with internal and external direction, policies, and regulations Designated and implemented a ``Mission Assurance and Manufacturing Engineering Program`` to include Quality, Configuration Management, Manufacturing, Engineering, and Safety Provided Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability</p> <p><i>FY 2010 Plans:</i> Provide government and contractor program staff and infrastructure for the overall management of the Ground Based Midcourse Defense ;program Provide technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, configuration management and integration activities</p>					

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>		PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>																			
B. Accomplishments/Planned Program (\$ in Millions)																							
<table border="1"> <thead> <tr> <th></th> <th>FY 2009</th> <th>FY 2010</th> <th>FY 2011 Base</th> <th>FY 2011 OCO</th> <th>FY 2011 Total</th> </tr> </thead> <tbody> <tr> <td> Provide contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight Ensure Ground Based Midcourse Defense program compliance with internal and external direction, policies, and regulations Continue a ``Mission Assurance and Manufacturing Engineering Program`` to include Quality, Configuration Management, Manufacturing, Engineering, and Safety Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Provide Quality Safety (QS) infrastructure support for Agency operations <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA </td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Element Engineering and Integration See Description Below <i>FY 2009 Accomplishments:</i> Ground Based Midcourse Defense Element Engineering and Integration (EE&I) provides systems engineering and integration essential for the development and fielding of the Ground Based Midcourse Defense hardware and software. Included in this effort are concept definition, requirements and interfaces, system design, integration, test planning and verification. Key products are development and maintenance of the technical baseline and critical engineering processes for implementation and delivery of an integrated Ground Based Midcourse Defense element capability. </td> <td align="right">122.720</td> <td align="right">122.609</td> <td align="right">0.000</td> <td align="right">0.000</td> <td align="right">0.000</td> </tr> </tbody> </table>							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Provide contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight Ensure Ground Based Midcourse Defense program compliance with internal and external direction, policies, and regulations Continue a ``Mission Assurance and Manufacturing Engineering Program`` to include Quality, Configuration Management, Manufacturing, Engineering, and Safety Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Provide Quality Safety (QS) infrastructure support for Agency operations <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA						Element Engineering and Integration See Description Below <i>FY 2009 Accomplishments:</i> Ground Based Midcourse Defense Element Engineering and Integration (EE&I) provides systems engineering and integration essential for the development and fielding of the Ground Based Midcourse Defense hardware and software. Included in this effort are concept definition, requirements and interfaces, system design, integration, test planning and verification. Key products are development and maintenance of the technical baseline and critical engineering processes for implementation and delivery of an integrated Ground Based Midcourse Defense element capability.	122.720	122.609	0.000	0.000	0.000
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total																		
Provide contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight Ensure Ground Based Midcourse Defense program compliance with internal and external direction, policies, and regulations Continue a ``Mission Assurance and Manufacturing Engineering Program`` to include Quality, Configuration Management, Manufacturing, Engineering, and Safety Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Provide Quality Safety (QS) infrastructure support for Agency operations <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA																							
Element Engineering and Integration See Description Below <i>FY 2009 Accomplishments:</i> Ground Based Midcourse Defense Element Engineering and Integration (EE&I) provides systems engineering and integration essential for the development and fielding of the Ground Based Midcourse Defense hardware and software. Included in this effort are concept definition, requirements and interfaces, system design, integration, test planning and verification. Key products are development and maintenance of the technical baseline and critical engineering processes for implementation and delivery of an integrated Ground Based Midcourse Defense element capability.	122.720	122.609	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>Ground Based Midcourse Defense will support the Ballistic Missile Defense System Hardware-In-The-Loop Modeling and Simulation Program by integrating into the Ballistic Missile Defense system-level Hardware-In-The-Loop single stimulation framework to support full-envelope Ballistic Missile Defense System ground test, flight test, and training events based upon Agency and Warfighter needs.</p> <p>Ground Based Midcourse Defense will support System Pre-Flight predictions for each system level flight test using the test framework set up with the Ballistic Missile Defense System configuration for a particular flight test. This provides the confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to prove out the construct of the flight test to ensure the required data and data management plan will support System Post-Flight Reconstruction objectives. System Post-Flight Reconstruction will use a Hardware-In-The-Loop and/or a Digital Models and Simulations Environment to replicate the day of flight for the Ballistic Missile Defense System configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) back to the real world event. System Post Flight Reconstruction is used for validation (anchoring) of models and simulations.</p> <p>Reengineered the Future Year Development Plan flight and ground test program to adopt a Simulation Based Acquisition (SBA) approach for evaluating system performance by collecting data where uncertainty exist identified by Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) for increasing accuracy and confidence from Models and Simulations applications. Delivered digital simulations of the Ground Based Midcourse Defense weapon system for assessing operational performance in a variety of engagement scenarios and supported the annual performance assessment of the Ballistic Missile Defense System Integrated Ground Based Midcourse Defense digital simulations into a common framework for achieving Missile Defense Agency's first comprehensive representation of the Ballistic Missile Defense System for assessing performance.</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>Completed requirements integration and traceability analysis for future Ballistic Missile Defense System requirements and Unified Missile Defense Functions Updated Ground Based Midcourse Defense Capabilities Document to include Ballistic Missile Defense System requirements</p> <p>Conducted Ground Based Midcourse Defense Build D Element Requirements Review</p> <p>Ballistic Missile Defense System integrated Build D functionality for Ground Based Midcourse Defense includes use of Ballistic Missile Defense System Track to conduct engagements, interceptor feature-aided correlation, and support for system-level battle management engagement direction. Continued software management, verification, validation and specialty engineering Continued system analysis, integration, verification and information sharing with Warfighter community Conducted design, planning, pre- and post-flight test analysis and post-flight reconstruction activities</p> <p><i>FY 2010 Plans:</i> Collection of test data from CECs/EMEs necessary for validation, verification, and accreditation of modeling and simulation representations used for assessing Ground Based Midcourse Defense weapon system performance</p> <p>Collect Critical Engagement Conditions / Empirical Measurement Event data necessary for validation, verification, and accreditation of modeling and simulation applications in the following areas: solar modeling and potential effects on intercepts, Exoatmospheric Kill Vehicle divert system performance, Exoatmospheric Kill Vehicle performance and maneuverability when reentering the atmosphere and 2-stage interceptor performance (For reference: event executed under Program Element 0603911C) Continue to deliver digital representations of the Ground Based Midcourse Defense weapon system to support the annual performance assessment Refine integration of Ground Based Midcourse Defense digital simulations into the Missile Defense Agency common framework for assessing Ballistic Missile Defense System performance</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>Continue system engineering effort enabling Unified Missile Defense Functions capabilities integration among Ground Based Midcourse Defense , Command & Control, Battle Management and Communications, and Sensors</p> <p>Continue requirements integration and traceability between Ballistic Missile Defense System Specification documents and corresponding Ground Based Midcourse Defense requirements and integration documentation</p> <p>Utilize Exoatmospheric Kill Vehicle Hardware-In-The-Loop space chamber (10V Chamber) for Flight Test Ground Based Midcourse DefenseD-06 post flight reconstruction (PFR)</p> <p>Continue software management, verification, validation and specialty engineering</p> <p>Continue system analysis, integration, verification and information sharing with Warfighter community</p> <p>Continue design, planning, pre- and post-flight test analysis for future flight and ground tests</p> <p>Perform information assurance (IA) activities: conduct engineering and architectural analyses/studies; provide operations and maintenance for IA capabilities; maintain IA workforce training and certification; support certification and accreditation testing and analysis</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Ground Based Interceptor</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Ground Based Interceptor development program continues the development of booster and CE-II Exoatmospheric Kill Vehicle technologies to defend the U.S. from limited Iranian long-range threats.</p>		416.257	276.660	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>This demonstrated capability will enhance the Ballistic Missile Defense System against long and intermediate-range ballistic missile attacks.</p> <p>Expanded and improved the interceptor fleet:</p> <p>Completed refurbishment of two Ground Based Interceptors Accelerated the 2-Stage development program; initiated acquisition of one 2-Stage Ground Based Interceptor for the Booster Verification Test (Booster Verification Test-1 with Exoatmospheric Kill Vehicle) now scheduled for Fiscal Year 2010 (For reference: event executed under Program Element 0603911C) Continued development of the Ground Based Interceptor Fleet Avionics Upgrade / Obsolescence Program Continued acquisition of 14 Ground Based Interceptors Completed acquisition of one Ground Based Interceptor (3-Stage Flight Test) and initiated one Ground Based Interceptor (2-Stage Flight Test) Continued acquisition of one Ground Based Interceptor (2-Stage Ground Tests) Completed software deliveries for 9.0 and 22.0 which provided discrimination improvements for Exoatmospheric Kill Vehicle and 5.2 and 7.1 for Booster</p> <p><i>FY 2010 Plans:</i> Continue to expand and improve interceptor fleet:</p> <p>Complete acquisition of three additional Ground Based Interceptors at Fort Greely, Alaska or Vandenberg Air Force Base to replace older fielded Ground Based Interceptors Continue acquisition of 11 Ground Based Interceptors to replace older fielded Ground Based Interceptors Complete acquisition of Booster Verification Test-01 with Exoatmospheric Kill Vehicle for 2-Stage Interceptor Verification Testing. (For reference: event executed under Program Element 0603911C)</p>					

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Continue development of software upgrades for Ground Based Interceptor Complete refurbishment of two Ground Based Interceptors <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	1,072.792	760.518	0.000	0.000	0.000

	FY 2009	FY 2010
Congressional Add: GMD Upgrades and Enhancements <i>FY 2009 Accomplishments:</i> <i>FY 2010 Plans:</i> Integrated the secondary Fort Greely, Alaska communication routes from Building 1768 to the Launch Facilities (LF-02, LF-03, LF-21, LF-23, LF-24) into the Command Launch Equipment network Repaired a Ground Based Interceptor Communications Link Subsystem and purchased additional Ground Based Interceptor test equipment Designed and initiated Fort Greely, Alaska automated power distribution control system to assist in controlling power spikes and allow automatic sequenced restart of system if recovering from a blackout Provided Subject Matter Expert review and assist in upgraded ground surveillance radar design of the Fort Greely, Alaska Missile Defense Complex security enhancements Initiated build out of the Consolidated Training Center (CTC) at Fort Greely, Alaska	40.000	0.000

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

	FY 2009	FY 2010
Congressional Add: GBI Vendor Base Sustainment <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> Initiate early purchase of refurbishment parts and motor sets for additional Ground Based Interceptors, mitigating manufacturing restart costs of the select group of warm Ground Based Interceptor 3rd and 4th tier suppliers	0.000	50.000
Congressional Adds Subtotals	40.000	50.000

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
• 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
• 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
	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384

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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 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>
• 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226

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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 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>
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>											
• 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
• 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

The Ground Based Midcourse Defense program will continue to follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, development, and evolutionary acquisition through incremental development. The Agency has structured the missile defense acquisition strategy to continually provide needed upgrades to the Ground Based Midcourse Defense system components within authorized funding availability. This process minimizes the risk of obsolescence, provides opportunities for standards updates, and allows decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities.

In Fiscal Year 2011 Ground Based Midcourse Defense will award a competitive Development and Sustainment Contract (DSC) for future development; fielding; test; systems engineering, integration and configuration management; equipment manufacturing and refurbishment; training, and operations and sustainment support for the Ground Based Midcourse Defense system and associated support facilities. This competition based acquisition approach will incorporate current contracts with

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<p>the DSC, emphasizes application of performance based tenets to establish long term relationships which provide timely high quality support of the core Ground Based Midcourse Defense weapons system while reducing life cycle and long-term ownership costs. The Ground Based Midcourse Defense competitive acquisition approach will help minimize the risk of obsolescence, provide opportunities for periodic weapons system refresh, and allow decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities.</p> <p>Additionally, Missile Defense Agency will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an Missile Defense Agency enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System mission. The objectives are to implement national engineering and support services for the Ballistic Missile Defense System mission across the Missile Defense Agency enterprise and Ground Based Midcourse Defense , 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 for Ground Based Midcourse Defense will include engineering and technical services; studies, analyses, and evaluation; and management and professional services.</p> <p>E. Performance Metrics NA</p>		

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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			
Ground Systems Fort Greely Missile Field 2 CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	223.701	13.200	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Systems Fort Greely Future Power Plant CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	119.107	0.000	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Systems Ground Systems Software Build 6 CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	33.160	0.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Systems Near Term Discrimination CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	4.354	0.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Systems Ground Systems Software for Flight Test CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	0.000	30.846	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Systems Long Haul Communications Transition to DISA CX08	TBD/TBD	MDA DISA	0.000	26.000	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors 31-38 CX08	SS/CPAF	AL/AK/AZ CA/CO/TX/VA	119.600	112.641	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors 39-44 CX08	SS/CPAF	AL/AK/AZ CA/CO/TX/VA	60.632	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
	SS/CPAF	Boeing	49.098	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Ground Based Interceptor Ground Based Interceptor Exoatmospheric Kill Vehicle Manufacturing Restart CX08		AL/AZ/CA											
Ground Based Interceptor Ground Based Interceptor Exoatmospheric Kill Vehicle Manufacturing Minimum Production CX08	SS/CPAF	Boeing AL/AZ/CA	28.380	79.712		0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptor Exoatmospheric Kill Vehicle/Orbital Boost Vehicle Development CX08	SS/CPAF	Boeing AL/AZ/CA	18.272	3.241		0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptor Refurbishment CX08	SS/CPAF	Boeing/AL/AK/AZ/CA CO/TX/VA	21.384	0.622	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Test Interceptors CX08	SS/CPAF	Boeing/AL/AK/AZ/CA CO/TX/VA	71.402	15.020	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	SS/CPAF	Boeing	12.900	0.000		0.000		0.000		0.000	0	12.900	Continuing

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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			
GMD Upgrades and Enhancements Improve Operational Availability CX08		AL/AK/AZ/CA/CO/TX/VA											
GMD Upgrades and Enhancements Ground Based Midcourse Defense Remote Workstations/Cheyenne Mountain Directorate CX08	SS/CPAF	Boeing AL/CO	6.000	0.000		0.000		0.000		0.000	0	6.000	Continuing
GMD Upgrades and Enhancements Ground Based Interceptor Communication Link System CX08	SS/CPAF	Boeing AZ/AL/CA/CO	13.600	0.000		0.000		0.000		0.000	0	13.600	Continuing
GMD Upgrades and Enhancements Fort Greely, Alaska Security CX08	TBD/TBD	Army/DOE AL/AK/NV	7.500	0.000		0.000		0.000		0.000	0	7.500	Continuing
GBI Vendor Base Sustainment Ground Based Interceptor Vendor Base Sustainment CX08	SS/CPAF	AL/AK/AZ/CA/CO/TX/VA	0.000	50.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			789.090	331.282		0.000		0.000		0.000			

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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			

Remarks
NA

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			
Ground Systems Ground Systems Prime Program Support CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	25.698	21.339	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Program Management CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	87.727	71.588	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Govt Civilian Salaries CX08	TBD/TBD	MDA AL/VA	28.300	24.800	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management FFRDC Support CX08	TBD/TBD	MIT/LL AL/VA/CO	4.100	6.321	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Other Govt Agencies CX08	TBD/TBD	Various AL/VA/FL/CO	6.300	5.500	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Contract Support Services CX08	C/CPAF	CSC LTAP AL/VA/CO/AK	61.750	65.908	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Program Management DPW World-Wide Support CX08	TBD/TBD	MDA DPW AL	18.863	6.195	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Safety and Quality CX08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	5.824	1.272	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Ballistic Missile Defense System Engineering Change Proposals CX08	TBD/TBD	MDA -	0.000	2.996	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element Engineering and Integration Ballistic Missile Defense System Hardware-In-The-Loop CX08	TBD/TBD	MDA -	0.000	34.145	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element Engineering and Integration Test Infrastructure CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	25.208	5.947	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element Engineering and Integration Modeling and Simulation CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	30.990	8.798	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element Engineering and Integration System Engineering and Integration CX08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	51.270	54.067	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Element Engineering and Integration Mission	SS/CPAF	Boeing	11.875	16.266	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</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			
Assurance Category 1 Information Assurance CX08		AL/AK/AZ/CA/CO/VA/NG/MA											
Element Engineering and Integration Ballistic Missile Defense System Common Threat CX08	TBD/TBD	MDA	3.293	3.386	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptor Prime Program Support CX08	SS/CPAF	AL/AK/AZ/CA/CO/TX/VA	81.390	65.424	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			442.588	393.952		0.000		0.000		0.000			

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			
BMDS Level Testing Element Readiness Test Costs CX08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	13.626	0.000	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	TBD/TBD	VAFB/CA	21.944	17.172	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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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			
BMDS Level Testing Flight Test Range Costs CX08		PRST/HI											
BMDS Level Testing Test Software & Labs CX08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	48.406	19.796	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Level Testing Flight Test Planning, Analysis & Execution CX08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	49.142	26.105	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Level Testing Infrastructure Support CX08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	16.281	22.211	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			149.399	85.284		0.000		0.000		0.000			

Remarks

NA

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			

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract			
Project Cost Totals			1,381.077	810.518	0.000	0.000	0.000						

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Fast Shield II		■																										
Ground Based Midcourse Defense Fire Control 6C/Command Launch Equipment 4.3 (Full Qualification Test) (Test Only)		■																										
10 Silos Fabrication (Fort Greely, Alaska Missile Field - 2)		■	■																									
Ground Based Interceptor Refurbishment 7R				■																								
Ground Based Interceptor Refurbishment 15R				■																								
Flight Test Ground Based Midcourse Defense-06 (Ground Based Interceptor)				■																								
Ground Test Focused-03e (Ballistic Missile Defense System Strategic Hardware-In-The-Loop Test)				■																								
Ground Systems 6B.1.5						■																						
Flight Test Ground Based Midcourse Defense-06 (Intercept Flight Test)							■																					
Ground Based Interceptor Refurbishment 17R							■																					
Ground Test Focused -04b (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)							■																					
Ground Based Interceptor Refurbishment 24R							■																					
								■																				

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Booster Verification Test-01 Ground Based Interceptor w/Exoatmospheric Kill Vehicle (PE 0603911C)																																
Grond Based Interceptors 31-33							■	■																								
Ground Test Focused-04c (Full Ballistic Missile Defense System Distributed Test)								■																								
Flight Test Experiment-10 (Cobra Dane Tracking Test)								■																								
Fort Greely, Alaska Power Plant								■																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Fast Shield II	2	2009	2	2009
Ground Based Midcourse Defense Fire Control 6C/Command Launch Equipment 4.3 (Full Qualification Test) (Test Only)	2	2009	2	2009
10 Silos Fabrication (Fort Greely, Alaska Missile Field - 2)	2	2009	3	2009
Ground Based Interceptor Refurbishment 7R	4	2009	4	2009
Ground Based Interceptor Refurbishment 15R	4	2009	4	2009
Flight Test Ground Based Midcourse Defense-06 (Ground Based Interceptor)	4	2009	4	2009
Ground Test Focused-03e (Ballistic Missile Defense System Strategic Hardware-In-The-Loop Test)	4	2009	4	2009
Ground Systems 6B.1.5	1	2010	1	2010
Flight Test Ground Based Midcourse Defense-06 (Intercept Flight Test)	2	2010	2	2010
Ground Based Interceptor Refurbishment 17R	2	2010	2	2010
Ground Test Focused -04b (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	2	2010	2	2010
Ground Based Interceptor Refurbishment 24R	2	2010	2	2010
Booster Verification Test-01 Ground Based Interceptor w/Exoatmospheric Kill Vehicle (PE 0603911C)	3	2010	3	2010
Grond Based Interceptors 31-33	3	2010	4	2010
Ground Test Focused-04c (Full Ballistic Missile Defense System Distributed Test)	4	2010	4	2010
Flight Test Experiment-10 (Cobra Dane Tracking Test)	4	2010	4	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT CX08: <i>Ground Based Midcourse Defense (GMD) Block 3.0</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Fort Greely, Alaska Power Plant	4	2010	4	2010

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</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
<i>WX08: GM Capability Development</i>	0.000	3.834	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	3.834
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the FY 2009-FY 2010 budget submissions are now captured in Project MD08 for FY2011 - 2015.

A. Mission Description and Budget Item Justification

Project WX08 funds Ground Based Midcourse Defense support of Ballistic Missile Defense System architecture developments, in particular, to provide a pervasive queuing with overhead IR sensors, with a focus on regional defense scenarios. This concept addresses the goals of enabling earlier interceptor commit and earlier intercepts.

Threat Systems Engineering supports the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process. The Threat Systems Engineering uses intelligence community data to define the Ballistic Missile Defense System threat space and directly supports the development of the Ballistic Missile Defense System Description Document and System and Element Specifications. This threat space is documented in the Adversary Data Packages (ADP), which includes common and consistent representation of Missile Systems and countermeasures to drive Ballistic Missile Defense System requirements, designs, and directly supports the execution of Integrated Master Test Plan (i.e. flight test targets, ground tests & digital simulations, and pre-mission analysis). Threat Systems Engineering also develops scenarios (trajectory and signature) for system and element utilization for compliance and assessment evaluations of Ballistic Missile Defense System capability to defend homeland, deployed forces, and friends and allies.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
OPIR Development See Description Below	0.000	3.834	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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2009 Accomplishments:</i>					
<i>FY 2010 Plans:</i> Determine and characterize Overhead Persistent Infrared (OPIR) interface requirements Execute initial development of regionally-tailored OPIR processing and connectivity; assess for performance via simulation					
<i>FY 2011 Base Plans:</i>					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	3.834	0.000	0.000	0.000

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
• 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
• 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
	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

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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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 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>
• 0603888C: <i>Ballistic Missile Defense Test and Targets</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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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>
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>											
• 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
• 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

The Overhead Persistent Infrared (OPIR) development will be accomplished by a cooperative program between Missile Defense Agency Elements using a performance based approach that ties program approval decisions to knowledge point accomplishment associated with incorporating advanced sensors to achieve OPIR track utilization including regional assets. The program will use existing Missile Defense Agency Federally Funded Research and Development Centers, Contract Support Services and other agency contracts.

E. Performance Metrics

NA

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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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			
OPIR Development Overhead Persistent Infrared Development WX08	C/Various	To be competed among Industry -	0.000	3.834		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			0.000	3.834		0.000		0.000		0.000			

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	0.000	3.834		0.000		0.000		0.000			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Upgrade Hardware & Software Framework					■	■																						
Integrate Improved Overhead Persistent Infrared Sensors					■	■	■	■																				
Begin Construction of Modeling & Simulation Environment					■	■	■	■																				
Demonstrate Cue for Launch-On Remote with OPIR Data							■	■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT WX08: <i>GM Capability Development</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Upgrade Hardware & Software Framework	1	2010	2	2010
Integrate Improved Overhead Persistent Infrared Sensors	1	2010	4	2010
Begin Construction of Modeling & Simulation Environment	1	2010	4	2010
Demonstrate Cue for Launch-On Remote with OPIR Data	3	2010	4	2010

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>				
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
XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>	249.519	194.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	443.816
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the FY 2009-FY 2010 budget submissions are now captured in Project MD08 for FY2011 - 2015.

A. Mission Description and Budget Item Justification

This project provides for the operations and sustainment of Ground Based Midcourse Defense fielded capabilities. This project also includes Base Operations support costs and delivery of Government Furnished Material and Services in support of the Prime Contract. The Ground Based Midcourse Defense Prime contractor and subcontractors will provide monitoring, diagnostics and maintenance of the fielded Ground Based Midcourse Defense components. Operations and sustainment efforts include:

The continued development and validation of maintenance procedures.

Tracking of repair parts stock levels.

24 hours a day, 7 days a week, 365 days a year monitoring and maintenance at Vandenberg AFB, Fort Greely, the Missile Defense Integration Operations Center (MDIOC) in Colorado Springs, and across the nation-wide Ground Based Midcourse Defense Communication Network (Ground Based Midcourse Defense Communications Network).

Delivery of essential Government Furnished Material and Services to ensure Prime Contract performance.

Base Operations Support at Vandenberg AFB, CA; Fort Greely, AK; and Colorado Springs, CO.

Upgrade and maintain security system at Fort Greely, AK.

Developing a competitive logistics acquisition strategy for follow-on maintenance.

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

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Operations and Sustainment</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Provided Ground Based Midcourse Defense Element operations and sustainment for Primary Mission Equipment (PME), support equipment, and operational facilities at Fort Greely, AK; Colorado Springs, CO; and Vandenberg Air Force Base, CA. Continued minimal spare replenishment through improved logistics repair analysis captured through performance metrics. Continued on-site sustaining engineering, ensuring logistics analysis is incorporated in technical data products. Continued stockpile reliability and component aging testing. Continued to develop and field System Level Ground Based Midcourse Defense Technical Manuals; update training materials and sustainment training packages to maintain operational and maintenance crew proficiency. Initiated Performance Based Logistics (PBL) acquisition strategy.</p> <p><i>FY 2010 Plans:</i> Provide GMD Element operations and sustainment for PME, support equipment, and operational facilities at Fort Greely, AK; Colorado Springs, CO; and Vandenberg Air Force Base, CA. Continue minimal spare replenishment through improved logistics repair analysis captured through performance metrics. Continue on-site sustaining engineering, ensuring logistics analysis is incorporated in technical data products. Continue stockpile reliability and component aging testing. Continue to develop and field System Level Ground Based Midcourse Defense technical manuals and update training materials to maintain crew proficiency.</p>	249.519	194.297	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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	249.519	194.297	0.000	0.000	0.000

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
• 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
• 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

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

The Ground Based Midcourse Defense (Ground Based Midcourse Defense) program will continue to follow the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, development, and evolutionary acquisition through incremental development. The Agency has structured the missile defense acquisition strategy to continually provide needed upgrades to the Ground Based Midcourse Defense system components within authorized funding availability. This process minimizes the risk of obsolescence, provides opportunities for standards updates, and allows decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities. Beginning in Fiscal Year 2011 and for the remainder of the program life cycle, Ground Based Midcourse Defense will incorporate tenets of competitive procurement in the acquisition strategy for all feasible elements of the weapons system. This competition based developmental approach will be enhanced within the Ground Based Midcourse Defense program by additional test infrastructure, improved test management, and improved models and simulations that enhance Ground Based Midcourse Defense's ability to test in more complex and operationally realistic test environments earlier than the standard acquisition process.

Additionally, Missile Defense Agency will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an Missile Defense Agency enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System mission. The objectives are to implement national engineering and support services for the Ballistic Missile Defense System mission across the Missile Defense Agency

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
<p>enterprise and Ground Based Midcourse Defense , 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 for Ground Based Midcourse Defense will include engineering and technical services; studies, analyses, and evaluation; and management and professional services.</p>		
<u>E. Performance Metrics</u> NA		

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Operations and Sustainment Maintenance of Primary System XX08	SS/CPAF	Boeing AL/AK/CA	200.624	69.599	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Sustaining Support Services XX08	SS/CPAF	Boeing AL/AK/CA	188.979	70.275	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Operations & Sustainment Repair and Maintenance Personnel XX08	SS/CPAF	Boeing AL/AK/CA	31.106	11.613	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Inter-Service Support	TBD/TBD	Beale & Others AK	24.182	13.500	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</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			
Agreement (ISA) Leases and Services XX08													
Operations and Sustainment Government Furnished Equipment & Services (GFX) XX08	TBD/TBD	DISA/VA, AMCOM/AL SMDC/AK/AL/HI	9.487	15.810	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Leases & Services FGA XX08	TBD/TBD	- Ft. Greely, AK	15.289	8.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Leases & Services VAFB/COS XX08	TBD/TBD	Vandenberg AFB COS	19.654	2.500	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Logistics Support Projects (RAM-T and other Operational Readiness Improvement Efforts) XX08	TBD/TBD	NSWC Crane, Tobyhana Depot Hill AFB	34.949	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Fort Greely Security Upgrade XX08	TBD/TBD	Sandia National Laboratories -	11.484	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Operations and Sustainment Certification & Accreditation Contract XX08	TBD/TBD	MDA DOC	9.232	3.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</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			
Subtotal			544.986	194.297		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT XX08: <i>Ground Based Midcourse Defense (GMD) Sustainment</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			544.986	194.297		0.000		0.000		0.000			

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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				PROJECT MD08: <i>Ground Based Midcourse</i>			
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
MD08: <i>Ground Based Midcourse</i>	0.000	0.000	1,300.655	0.000	1,300.655	1,071.957	1,249.802	1,064.572	996.981	Continuing	Continuing
Quantity of RDT&E Articles	0	0	7	0	7	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX08, CX08, WX08 and XX08 in the FY 2009-FY 2010 budget submissions are now captured in Project MD08 for FY2011 - 2015.

A. Mission Description and Budget Item Justification

Project MD08 provides funding for the development and fielding of incremental component capability enhancements to Project CX08.

To counter the Intercontinental Ballistic Missile and Intermediate Range Ballistic Missile threat, the United States deploys Ground-Based Midcourse Defense (Ground Based Midcourse Defense) interceptors in silos at Fort Greely, AK (Fort Greely, Alaska) and Vandenberg Air Force Base, CA (Vandenberg Air Force Base), to defend our Homeland from Intercontinental Ballistic Missile or Intermediate Range Ballistic Missile attack. In Fiscal Year 2010, we will continue the development of long-range Ground Based Midcourse Defense capabilities with missile fields at Fort Greely, Alaska and Vandenberg Air Force Base, where we will maintain 26 and four Ground Based Interceptors, respectively. This work will improve protection of the United States against a limited number of rogue state launches of Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles. Given the small inventory of long-range ballistic missiles deployed by rogue states, thirty highly-ready Ground Based Interceptors will provide the United States substantial fire power.

These enhancements include:

Maintain traceability between the Ballistic Missile Defense System Specification, associated documentation and the corresponding Ground Based Midcourse Defense Element requirements and integration into Ballistic Missile Defense System; conduct Ground Based Midcourse Defense Build D Element Requirements Review and Preliminary Design Review for Ground Systems 8A, EKV 10.0 development that add Ballistic Missile Defense planning enhancements to the Space Based Infrared System interface, Warfighter operation, and other Command & Control, Battle Management and Communications enhancements

Ballistic Missile Defense System Integrated Build D functionality for Ground Based Midcourse Defense includes use of ballistic missile defense System Tracks to conduct engagements, interceptor feature-aided correlation, and support for system-level battle management engagement direction.

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Initiate design and analysis of the Ballistic Missile Defense System track capability using the Quality of Service requirement (that is, data of sufficient accuracy and low enough latency to support successful engagement of ballistic missiles) for associated Command & Control, Battle Management and Communications and sensor capabilities provided by Missile Defense Agency Systems Engineering

Continue acquisition of 11 Ground Based Interceptors for fielding at Fort Greely, Alaska or Vandenberg Air Force Base to replace older fielded Ground Based Interceptors

Initiate rotation plan of older fielded Ground Based Interceptors to Flight Test configuration to support Integrated Master Test Plan requirements

Initiate acquisition of five additional Ground Based Interceptors with upgraded booster avionics (Fleet Avionics Upgrade/Obsolescence Program) to support Integrated Master Test Plan requirements and Stockpile Reliability, to include manufacturing line restart and vendor requalification; this will be the first new order of Ground Based Interceptors since 2006

Initiate development of software builds to utilize improved discrimination from Sensors, improve integration with the Ballistic Missile Defense System, accommodate upgraded Ground Based Interceptors, and incorporate recommendations from the Warfighter

Continue integration of first seven silos for Missile Field-2 and Missile Field-2 Mechanical Electrical Building (MEB) to provide the Warfighter with a highly reliable and hardened Missile Field capability; restart installation, integration and checkout of seven additional silos to deliver Missile Field-2 in a 14 silo configuration

Continue the Ballistic Missile Defense System flight and ground test program to bolster confidence in the missile defense capabilities under developments and ensure the capabilities transferred to the Warfighter are operationally effective, suitable, and survivable

Continue 2-Stage Ground Based Interceptor for Flight Test

Continue development of models and simulations to increase fidelity and assess system performance in areas unable to test

Support the Ballistic Missile Defense System Hardware-In-The-Loop Modeling and Simulation Program

Continue to provide for the operations and sustainment of Ground Based Midcourse Defense fielded capability at Fort Greely, Alaska, Vandenberg Air Force Base, the Missile Defense Integration Operations Center (MDIOC), and across the nation-wide Ground Based Midcourse Defense Communications Network

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Ground Systems	0.000	0.000	195.563	0.000	195.563
See Description Below					
<i>FY 2009 Accomplishments:</i> Accomplishments found in Projects AX08 and CX08					

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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 2010 Plans:</i> Planned Program found in Projects AX08 and CX08</p> <p><i>FY 2011 Base Plans:</i> The Ground Based Midcourse Defense Ground Systems enable control and operation of the Ground Based Midcourse Defense Element as part of the Ballistic Missile Defense System. Ground Systems consists of the Ground Based Midcourse Defense Fire Control, Test Exerciser, and External Systems Interface (ESI), Ground Based Midcourse Defense Communications Network (Ground Based Midcourse Defense Communications Network), In-Flight Interceptor Communications System (IFICS) Data Terminal (IDT), Launch Site Components (LSC) (silos, SIVs), and Launch Support Systems (LSS) (Command Launch Equipment (Command Launch Equipment) and Launch Support Equipment (LSE)).</p> <p>Continue improvement of Ground Systems capabilities, with the following functionalities which are included in Ballistic Missile Defense Systems Integrated Build C and Build D:</p> <p>Modify and upgrade Ground Systems 6B suite of products to integrate additional forward based radar (6B 1.5) from Sensor's Army Navy/Transportable Radar Surveillance radars, for Ground Based Midcourse Defense to provide Command & Control, Battle Management and Communications essential elements of information, 2-stage interceptor capability, Sea Based X-Band Radar-Interceptor Data Terminal dynamic positioning, Warfighter requested changes, and Fort Greely, Alaska Missile Field-2 support (6B.2 & Command Launch Equipment 4.3)</p> <p>Initiate design and development of Ground Systems 8A suite of products to utilize improved discrimination from Sensors X-band sensors, improve integration with the Command & Control, Battle Management and Communications, accommodate upgraded Ground Based Interceptors, and incorporate recommendations from the Warfighter</p> <p>Continue integration of the first seven silos for Missile Field-2 and Missile Field-2 Mechanical Electrical Building (MEB) to provide the Warfighter with a highly reliable and hardened Missile Field capability.</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>Restart installation, integration, and checkout of seven additional silos to deliver Missile Field-2 in a 14 silo configuration</p> <p>Explore incorporation of the Ballistic Missile Defense System Track capability into the Ground Based Midcourse Defense Fire Control loop consisting of sensor tracks from Sensors Army Navy/ Transportable Radar Surveillance radars or Aegis radars, track correlation performed by Command & Control, Battle Management and Communications to deliver a Ballistic Missile Defense System track to Ground Based Midcourse Defense for planning a Ground Based Interceptor engagement on the Ballistic Missile Defense system track</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Element Engineering and Integration</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Accomplishments found in Project CX08</p> <p><i>FY 2010 Plans:</i> Planned Program found in Project CX08</p> <p><i>FY 2011 Base Plans:</i> Ground Based Midcourse Defense Element Engineering and Integration (EE&I) provides systems engineering and integration essential for the development and fielding of the Ground Based Midcourse Defense hardware and software. Included in this effort are concept definition, requirements and interfaces, system design, integration, test planning and verification. Key products are development and maintenance of the technical baseline and critical engineering processes for implementation and delivery of an integrated Ground Based Midcourse Defense element capability.</p>				0.000	0.000	190.236	0.000	190.236

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The Ballistic Missile Defense Digital Simulations Architecture (DSA) is the primary Models and Simulations System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the Ballistic Missile Defense System Program. The DSA-performance architecture and Element and component high fidelity models support PA events, which provide critical system level performance data relative to all elements, system engineers, Models and Simulations developers, the OTA and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.</p> <p>The Ballistic Missile Defense Single Stimulation Framework (SSF) utilizes Hardware-in-the-Loop (HWIL) assets to support primarily Ballistic Missile Defense System ground testing, pre and post-flight test mission construction and reconstruction, portions of the training capability, war-games, exercises and Ballistic Missile Defense System contingency studies, as well as various other use cases to enable Ballistic Missile Defense System performance in a simulated environment. Each Ballistic Missile Defense System Element supports the Models and Simulations Program by providing Hardware-In-The-Loop representations ready for integration into the Ballistic Missile Defense System system-level framework to support full-envelope Ballistic Missile Defense System ground test, flight test, and training events base upon Agency and Warfighter needs. Ground Based Midcourse Defense will support the Ballistic Missile Defense System Hardware-In-The-Loop Modeling and Simulation Program by integrating into the Ballistic Missile Defense System system-level Hardware-In-The-Loop single stimulation framework to support full-envelope Ballistic Missile Defense System ground test, flight test, and training events based upon Agency and Warfighter needs.</p> <p>Ground Based Midcourse Defense will support System Pre-Flight predictions for each system level flight test using the test framework set up with the Ballistic Missile Defense System configuration for a particular flight test. This provides the confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to prove out the construct</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>of the flight test to ensure the required data and data management plan will support System Post Flight Reconstruction objectives. System Post Flight Reconstruction will use a Hardware-In-The-Loop and/or a Digital Models and Simulations Environment to replicate the day of flight for the Ballistic Missile Defense System configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) back to the real world event. CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations system post flight reconstruction (SPFR) is used for validation (anchoring) of models and simulations.</p> <p>Continue modeling and simulation development and integration to assess component and system performance and execute annual technical assessments to support congressional reporting Continue modeling and simulation verification, validation, and accreditation to ensure high confidence in Warfighter assessments Continue engineering analysis, capability integration, and performance verification for successful Ground Based Midcourse Defense development and Ballistic Missile Defense System integration; integrate Ground Based Midcourse Defense Tactical System Hardware/Software with Missile Defense Agency Single Stimulation Framework in support of Ground Test-04 Campaign Continue system engineering effort enabling Unified Missile Defense Functions capabilities integration between Ground Based Midcourse Defense , Command & Control, Battle Management and Communications and Sensors Maintain traceability between the Ballistic Missile Defense System Specification, associated documentation and the corresponding Ground Based Midcourse Defense Element requirements and integration into Ballistic Missile Defense System; conduct Ground Based Midcourse Defense Build D Element Requirements Review and Preliminary Design Review for Ground Systems 8A, EKV 10.0 development that add Ballistic Missile Defense planning enhancements to the Space Based Infrared</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>System interface, Warfighter operation, and other Command & Control, Battle Management and Communications enhancements.</p> <p>Ballistic Missile Defense System Integrated Build D functionality for Ground Based Midcourse Defense includes use of ballistic missile defense System Tracks to conduct engagements, interceptor feature-aided correlation, and support for system-level battle management engagement direction. Initiate engineering activities for Ground Based Midcourse Defense Build D Ground Systems 10A development Perform information assurance (IA):</p> <p>Conduct engineering and architectural analyses/studies; provide operations and maintenance for IA capabilities Maintain IA workforce training and certification; support certification and accreditation testing and analysis Support Component Requirements Review and Preliminary Design Reviews to ensure successful development capabilities Continue software management, verification, validation and planning for integration of Ground Based Midcourse Defense Fire Control 6B.2 functionality</p> <p>Ground Based Midcourse Defense provides Command & Control, Battle Management and Communications Essential Elements of Information (EEl)s Warfighter Enhancement Screen Displays Sensors provides advanced interoperability and discrimination information to Ground Based Midcourse Defense Continue software management, verification, validation and planning for integration of Ground Based Midcourse Defense Fire Control 8A functionality</p>					

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B. Accomplishments/Planned Program (\$ in Millions)										
<p>Sensors provides Near Term Discrimination (NTD) information (with additional threat feature characteristics) to Ground Based Midcourse Defense for increasing Ground Based Interceptor Single Shot Probability of Kill performance</p> <p>Updated interface to Space Based Infrared Radar System</p> <p>Initiate design and analysis of the Ballistic Missile Defense System track capability using the Quality of Service requirement (that is, data of sufficient accuracy and low enough latency to support successful engagement of ballistic missiles) for associated Command & Control, Battle Management and Communications and sensor capabilities provided by Missile Defense Agency Systems Engineering</p> <p>Continue Ground Based Midcourse Defense System Verification Plan Development for Ballistic Missile Defense System Build D Requirements, including utilization of ballistic missile defense System Tracks to conduct engagements, interceptor feature-aided correlation, and support for system-level battle management engagement direction.</p> <p>Trace Ballistic Missile Defense System Specification requirements to Ground Based Midcourse Defense Capability Document, identify verification methods, document requirement variances for planning future development activities</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Program Management See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Accomplishments found in Project CX08</p> <p><i>FY 2010 Plans:</i> Planned Program found in Project CX08</p>						0.000	0.000	189.536	0.000	189.536

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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 2011 Base Plans:</i></p> <p>This effort provides for the prime contractor and government management of the Ground Based Midcourse Defense program. Included in this effort is program and business management, program administration, technical and testing oversight, subcontractor management, verification of hardware and software development, quality/safety/mission assurance, integrated logistic support, and government manpower and infrastructure to develop, test and sustain the Ground Based Midcourse Defense system and components.</p> <p>Provide technical and business management support activities, financial management, cost and schedule performance analysis cost estimation and analysis, configuration management and integration activities</p> <p>Provide contractor program management, subcontract management, quality assurance, verification of hardware and software development, and technical and testing oversight</p> <p>Ensure Ground Based Midcourse Defense ; program compliance with internal and external direction, policies, and regulations</p> <p>Continue a ``Mission Assurance and Manufacturing Engineering Program`` to include Quality, Configuration Management, Manufacturing, Engineering, and Safety</p> <p>Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability</p> <p><i>FY 2011 OCO Plans:</i></p> <p>NA</p>								
Ground Based Interceptor See Description Below				0.000	0.000	358.912	0.000	358.912
<p><i>FY 2009 Accomplishments:</i></p> <p>Accomplishments found in Projects AX08 and CX08</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 2010 Plans:</i> Planned Program found in Projects AX08 and CX08</p> <p><i>FY 2011 Base Plans:</i> The Ground Based Interceptor program continues to complete manufacturing deliveries and improve the interceptor fleet reliability through improved booster and CE-II Exoatmospheric Kill Vehicle technologies to defend the Homeland. This demonstrated capability will enhance the Ballistic Missile Defense System against long and intermediate range ballistic missile attacks through the completion and fielding of five and continuation of six operational 3-stage interceptors to replace older fielded configuration to maintain a total of 30 operational assets. To aid in the accomplishment of this mission, the Ground Based Interceptor program provides developmental assets for flight testing through conversion of older fielded Ground Based Interceptors to Flight Test configuration. Ground Based Interceptor software builds will also be initiated to implement Near Term Discrimination (NTD) capability consisting of sensor tracks from Sensors radars, Single Shot Probability of Kill improvements, and booster software changes to accommodate the upgraded avionics (Fleet Avionics Upgrade/Obsolescence Program). Continue to expand and improve interceptor fleet:</p> <p>Complete one refurbishment Complete acquisition of five additional Ground Based Interceptors at Fort Greely, Alaska or Vandenberg Air Force Base to replace older fielded Ground Based Interceptors to reduce the age of the fielded fleet Continue acquisition of six Ground Based Interceptors to replace older fielded Ground Based Interceptors Initiate rotation plan of older fielded Ground Based Interceptors to Flight Test configuration to support Integrated Master Test Plan 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>Initiate enhanced Refurbishment Kit and Limited Life Item Hardware purchases that will be used to refurbish the older fielded Ground Based Interceptors and improve reliability as part of the program plan to sustain the lifecycle of Ground Based Interceptors to Fiscal Year 2030 and beyond</p> <p>Initiate acquisition of five additional Ground Based Interceptors with upgraded booster avionics (Fleet Avionics Upgrade/Obsolescence Program) to support Integrated Master Test Plan requirements, to include manufacturing line restart and vendor requalification.</p> <p>Initiate Exoatmospheric Kill Vehicle software development of NTD capability improvements (provides enhanced discrimination using data from Sensors) and improvements for increasing Single Shot Probability of Kill to potentially reduce the number of interceptors allocated by the Warfighter for each threat</p> <p>Continue Ground Based Interceptor Stockpile Reliability Program which includes testing of available Ground Based Interceptor components to collect reliability and aging data and assessment of operational fleet refurbishment requirements</p> <p>Initiate Booster software development to accommodate the upgraded avionics (Fleet Avionics Upgrade/Obsolescence Program)</p> <p>Continue 2-Stage Ground Based Interceptor for Flight Test</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>BMDS Level Testing</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Accomplishments found in Projects AX08 and CX08</p> <p><i>FY 2010 Plans:</i> Planned Program found in Projects AX08 and CX08</p>	0.000	0.000	182.247	0.000	182.247

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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 2011 Base Plans:</i></p> <p>Ground Based Midcourse Defense executes a rigorous test program that includes expanding our flight and ground test programs to test our capability against intermediate- and long-range threats. The test program is intended to bolster confidence in the missile defense capabilities under developments and ensure the capabilities transferred to the Warfighter are operationally effective, suitable, and survivable.</p> <p>Missile Defense Agency Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting Ballistic Missile Defense-System level testing. Ground Based Midcourse Defense Element Level testing is funded as part of a developmental program and reflected in this Program Element (Program Element) submission. This Program Element also provides Ground Based Midcourse Defense participation in the consolidated Missile Defense Agency-wide System Test Program and the resources for the, planning, design, execution, and management of Ground Based Midcourse Defense in Ballistic Missile Defense System testing in accordance with the Ballistic Missile Defense System Test Policy, Missile Defense Agency Directive 3202.03 (January 2009).</p> <p>At the end of Fiscal Year 2011, the Critical Engagement Conditions / Empirical Measurement Event (CEC/EME)** data necessary to validation, verification, and accreditation of modeling and simulations is projected to increase from 44% to 59% complete</p> <p>Participate in Flight Test Ground Based Midcourse DefenseD-09, a 3-stage intercept engagement with associated objects, using a Ground Based Interceptor launch from Vandenberg Air Force Base against a target launched from Reagan Test (RTS)</p> <p>Critical Engagement Conditions / Empirical Measurement Event data collected validates Models and Simulations estimates on interceptor performance in medium closing velocity engagements and Exoatmospheric Kill Vehicle performance with multiple competing objects</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>Demonstrate Exoatmospheric Kill Vehicle 22.0 updates that improve single shot probability of kill, Exoatmospheric Kill Vehicle discrimination, enhancements for medium/high closing velocity intercepts and efficiencies on divert systems performance</p> <p>Initiate planning for Flight Test Ground Based Midcourse DefenseD-08, a 2-stage intercept engagement with associated objects, using a Ground Based Interceptor launch from Vandenberg Air Force Base against a target launched from RTS</p> <p>First time intercept with 2-stage interceptor</p> <p>Critical Engagement Conditions / Empirical Measurement Event data collected validates Models and Simulations estimates on booster, avionics and divert systems performance over time and Exoatmospheric Kill Vehicle discrimination performance on new threat scene with more and different types of multiple competing objects</p> <p>Demonstrate Ground Based Midcourse Defense Fire Control 6B.2/Command Launch Equipment 4.3 functionality with 2-stage interceptor flyouts and launch operations</p> <p>Conduct five Ground Based Midcourse Defense hardware component tests to collect Critical Engagement Conditions / Empirical Measurement Event data for anchoring models to validate system performance</p> <p>Conduct focused chamber ground tests to expand knowledge on solar effects and engagements with multiple competing objects on Exoatmospheric Kill Vehicle performance and Models and Simulations Verification, Validation, and Accreditation (VV&A)</p> <p>Testing Ground Based Interceptor through conducting a series of five digital simulations for Ground Based Interceptor performance assessments; these Ground Based Interceptor tests should lead to increased model fidelity with respect to Exoatmospheric Kill Vehicle sensor performance and allow the Warfighter to run more end-game scenarios when possible in place of flight tests</p> <p>Continue 2-Stage Ground Based Interceptor Flight Test Planning.</p> <p>Support execution of Ballistic Missile Defense System Ground Test-04 test campaign to assess Ballistic Missile Defense System capabilities</p>					

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B. Accomplishments/Planned Program (\$ in Millions)					
<p>** Critical Engagement Conditions / Empirical Measurement Event (CEC/EME) are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Sustainment</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Accomplishments found in Project XX08</p> <p><i>FY 2010 Plans:</i> Planned Program found in Project XX08</p> <p><i>FY 2011 Base Plans:</i> The Operations and Sustainment mission provides for the operations, maintenance, repair, training, sustaining engineering (including stock pile reliability and logistics) of the Ground Based Midcourse Defense System. In addition to the above, base operations costs for Ground Based Midcourse Defense ; facilities in Colorado Springs, CO; Vandenberg AFB, CA (Vandenberg Air Force Base) and Fort Greely, AK (Fort Greely, Alaska) are included as well as Government Furnished Services and Equipment (GFX). Execution of the Operations and Sustainment mission will be achieved through a combination of directed activities under the competitively awarded Performance Based Logistics contract (operations, maintenance, repair and training) and through direct placement of funding to mission essential activities (stockpile reliability, logistics, base operations costs and GFX).</p>					
	0.000	0.000	184.161	0.000	184.161

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Provide Ground Based Midcourse Defense ; Element operations and sustainment for Primary Mission Equipment (PME), support equipment, and operational facilities at Fort Greely, Alaska, Colorado Springs, CO; and Vandenberg Air Force Base Continue minimal spare replenishment through improved logistics repair analysis captured through performance metrics Continue on-site sustaining engineering, ensuring logistics analysis is incorporated in technical data products Continue stockpile reliability and component aging testing to better understand the health of the deployed assets, thus ensuring the required improvements are made during planned refurbishments Continue training, education, and qualification/certification operations at the Joint Ground Based Midcourse Defense Training and Exercise Center (J-Ground TestEC) for the Warfighter and other staff Continue to develop and field System Level Ground Based Midcourse Defense ; Technical Manuals and update training materials to maintain Warfighter proficiency Conduct security engineering and planning in conjunction with concurrent MILCON planning and design to support an Fiscal Year 2013 MILCON project to upgrade Fort Greely, Alaska physical security <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	1,300.655	0.000	1,300.655

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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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				PROJECT MD08: <i>Ground Based Midcourse</i>				
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>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>				PROJECT MD08: <i>Ground Based Midcourse</i>				
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>											
• 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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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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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

The Ground Based Midcourse Defense (Ground Based Midcourse Defense) program will continue to follow the Missile Defense Agency’s capability-based acquisition strategy that emphasizes testing, development, and evolutionary acquisition through incremental development. The Agency has structured the missile defense acquisition strategy to continually provide needed upgrades to the Ground Based Midcourse Defense system components within authorized funding availability. This process minimizes the risk of obsolescence, provides opportunities for standards updates, and allows decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities.

In Fiscal Year 2011 Ground Based Midcourse Defense will award a competitive Development and Sustainment Contract (DSC) for future development; fielding; test; systems engineering, integration and configuration management; equipment manufacturing and refurbishment; training, and operations and sustainment support for the Ground Based Midcourse Defense system and associated support facilities. This competition based acquisition approach will incorporate three current contracts with the DSC, emphasizes application of performance based tenets to establish long term relationships which provide timely high quality support of the core Ground Based Midcourse Defense weapons system while reducing life cycle and long-term ownership costs. The Ground Based Midcourse Defense competitive acquisition approach will help minimize the risk of obsolescence, provide opportunities for periodic weapons system refresh, and allow decision makers to make informed trades between cost, schedule, and performance while exploring operational and technological possibilities.

Additionally, Missile Defense Agency will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an Missile Defense Agency enterprise-wide Advisory and Assistance Services (A&AS) approach to support the Ballistic Missile Defense System mission. The objectives are to implement national engineering and support services for the Ballistic Missile Defense System mission across the Missile Defense Agency enterprise and Ground Based Midcourse Defense , 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 for Ground Based Midcourse Defense will include 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

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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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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			
Ground Systems Long Haul Communications Transfer to Defense Information Systems Agency MD08	TBD/TBD	MDA DISA	0.000	0.000		6.967	Oct 2010	0.000		6.967	Continuing	Continuing	Continuing
Ground Systems Fort Greely Missile Field 2 MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	0.000	0.000		67.100	Jan 2011	0.000		67.100	Continuing	Continuing	Continuing
Ground Systems Ground Systems Engineering Services MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	0.000	0.000		39.378	Jan 2011	0.000		39.378	Continuing	Continuing	Continuing
Ground Systems Ground Systems Software Development 6B Dot Builds MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	0.000	0.000		21.412	Jan 2011	0.000		21.412	Continuing	Continuing	Continuing
Ground Systems Ground Systems Software Development 8A MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/VA	0.000	0.000		27.804	Jan 2011	0.000		27.804	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors 34-44 MD08	SS/CPAF	NA AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		136.771	Jan 2011	0.000		136.771	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors Refurbishments & Operational Spares MD08	SS/CPAF	NA AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		73.153	Jan 2011	0.000		73.153	Continuing	Continuing	Continuing

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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			
Ground Based Interceptor Ground Based Interceptors Supplier Restart / Requalification MD08	SS/CPAF	NA AL/AK/AZ/CA/ CO/TX/VA	0.000	0.000		40.029	Jan 2011	0.000		40.029	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors Software Maintenance & Updates MD08	SS/CPAF	NA AL/AK/AZ/CA/ CO/TX/VA	0.000	0.000		9.590	Jan 2011	0.000		9.590	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors Fleet Avionics Upgrade/ Obsolescence Program Development MD08	SS/CPAF	NA AL/AK/AZ/CA/ CO/TX/VA	0.000	0.000		39.114	Jan 2011	0.000		39.114	Continuing	Continuing	Continuing
Ground Based Interceptor Ground Based Interceptors Rotations for Ballistic Missile Defense System Level Testing MD08	SS/CPAF	NA AL/AK/AZ/CA/ CO/TX/VA	0.000	0.000		60.255	Jan 2011	0.000		60.255	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		521.573		0.000		521.573			

Remarks

NA

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</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			
Ground Systems Ground Systems Prime Program Support MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		32.902	Jan 2011	0.000		32.902	Continuing	Continuing	Continuing
Element Engineering and Integration Ballistic Missile Defense System Hardware-In-The-Loop MD08	TBD/TBD	MDA AL/VA	0.000	0.000		34.257	Jan 2011	0.000		34.257	Continuing	Continuing	Continuing
Element Engineering and Integration Modeling and Simulation MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		48.554	Jan 2011	0.000		48.554	Continuing	Continuing	Continuing
Element Engineering and Integration System Engineering and Integration MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		84.391	Jan 2011	0.000		84.391	Continuing	Continuing	Continuing
Element Engineering and Integration Information Assurance MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		23.034	Jan 2011	0.000		23.034	Continuing	Continuing	Continuing
Program Management DPW World-Wide Support MD08	TBD/TBD	MDA DPW/AL	0.000	0.000		28.789	Jan 2011	0.000		28.789	Continuing	Continuing	Continuing
Program Management Prime Program Management MD08	SS/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		61.905	Jan 2011	0.000		61.905	Continuing	Continuing	Continuing
	TBD/TBD	MDA AL/VA	0.000	0.000		20.650	Jan 2011	0.000		20.650	Continuing	Continuing	Continuing

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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			
Program Management Govt Civilian Salaries MD08													
Program Management FFRDC Support MD08	TBD/TBD	MIT/LL AL/VA/CO	0.000	0.000		6.321	Jan 2011	0.000		6.321	Continuing	Continuing	Continuing
Program Management Contract Support Services MD08	C/CPAF	CSC LTAP AL/VA/CO/AK	0.000	0.000		67.071	Jan 2011	0.000		67.071	Continuing	Continuing	Continuing
Program Management Other Govt Agencies MD08	TBD/TBD	Various AL/VA/FL/CO	0.000	0.000		3.500	Jan 2011	0.000		3.500	Continuing	Continuing	Continuing
Program Management Safety and Quality MD08	C/CPAF	Boeing AL/AK/AZ/CA/ CO/TX/VA	0.000	0.000		1.300	Jan 2011	0.000		1.300	Continuing	Continuing	Continuing
Sustainment Maintenance of Primary System MD08	SS/CPAF	Boeing AL/AK/CA	0.000	0.000		69.914	Jan 2011	0.000		69.914	Continuing	Continuing	Continuing
Sustainment Sustaining Support Services MD08	SS/CPAF	Boeing AL/AK/CA	0.000	0.000		49.895	Jan 2011	0.000		49.895	Continuing	Continuing	Continuing
Sustainment Operations & Sustainment Repair and Maintenance Personnel MD08	SS/CPAF	Boeing AL/AK/CA	0.000	0.000		11.614	Jan 2011	0.000		11.614	Continuing	Continuing	Continuing
Sustainment Stockpile Reliability MD08	TBD/TBD	Naval Surface Warfare Center IN	0.000	0.000		16.098	Jan 2011	0.000		16.098	Continuing	Continuing	Continuing

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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			
Sustainment Fort Greely, Alaska Operations (Gov't Leases & Services) MD08	TBD/TBD	Army Ft. Greely, AK	0.000	0.000		15.440	Jan 2011	0.000		15.440	Continuing	Continuing	Continuing
Sustainment Vandenberg Air Force Base Operations (Gov't Leases & Services) MD08	TBD/TBD	Air Force Vandenberg, CA	0.000	0.000		4.500	Jan 2011	0.000		4.500	Continuing	Continuing	Continuing
Sustainment Colorado Springs Operations (Gov't Leases & Services) MD08	TBD/TBD	Air Force COS, CO	0.000	0.000		8.200	Jan 2011	0.000		8.200	Continuing	Continuing	Continuing
Sustainment Government Furnished Equipment & Services (GFX) MD08	TBD/TBD	Military Traffic Management Command Various	0.000	0.000		8.500	Jan 2011	0.000		8.500	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		596.835		0.000		596.835			

Remarks
NA

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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			
BMDS Level Testing Ground Test-04 Campaign (Focused-Integrated-Distributed) MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		15.640	Jan 2011	0.000		15.640	Continuing	Continuing	Continuing
BMDS Level Testing Ground Based Midcourse Defense Ground Chamber Tests MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		35.298	Jan 2011	0.000		35.298	Continuing	Continuing	Continuing
BMDS Level Testing Flight Test Range Costs MD08	TBD/TBD	VAFB, CA/RTS, Kwaj PRST, HI	0.000	0.000		24.486	Jan 2011	0.000		24.486	Continuing	Continuing	Continuing
BMDS Level Testing Flight Test Planning, Analysis & Execution MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		54.448	Jan 2011	0.000		54.448	Continuing	Continuing	Continuing
BMDS Level Testing Target of Opportunity Test Participation (Flight Test Sensors / Flight Test Experiment) MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		1.001	Jan 2011	0.000		1.001	Continuing	Continuing	Continuing
BMDS Level Testing Test Infrastructure & Support MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		43.954	Jan 2011	0.000		43.954	Continuing	Continuing	Continuing
BMDS Level Testing Flight Test Silo Turnaround MD08	C/CPAF	Boeing AL/AK/AZ/CA/CO/TX/VA	0.000	0.000		7.420		0.000		7.420	Continuing	Continuing	Continuing

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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			0.000	0.000		182.247		0.000		182.247			

Remarks
NA

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			
	0.000	0.000		1,300.655		0.000		1,300.655			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Ground Test Focused-04d (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)									■																			
Ground Systems 6B.2									■																			
Ground Based Interceptors 34-36									■	■																		
Ground Test Integrated-04 (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)										■																		
Flight Test Ground Based Midcourse Defense-09											■																	
Ground Based Interceptors 37-38											■	■																
Ground Test Integrated-04 (EXE) (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)												■																
Ground Based Interceptors 39-41													■	■														
Ground Test Distributed-04 (Full Ballistic Missile Defense System Distributed Test)														■														
Ground Based Interceptors 42-44															■	■												
Flight Test Ground Based Midcourse Defense-08 (Intercept Flight Test)																												
Fort Greely, Alaska Missile Field - 2																												
Flight Test Ground Based Midcourse Defense-08 Ground Based Interceptor																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Ground Systems 8A																												
Ground Test Focused-05b (Strategic Focused Hardware-In-The-Loop Test)																												
Ground Test Integrated-05 (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)																												
Ground Test Integrated-05 (EXE) (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)																												
Flight Test Sensors-02 (Space Tracking & Surveillance System Demonstrator Flight Test)																												
Ground Test Distributed-05 (Full Ballistic Missile Defense System Distributed Test)																												
Flight Test Ground Based Midcourse Defense-11 (GMD Intercept Flight Test)																												
Ground Systems 10A																												
Ground Test-06 Campaign																												
EPOCH-2 (Ground Based Midcourse Defense/ Aegis/Terminal High Altitude Area Defense/ Patriot Multiple Engagement Flight Test)																												
Ground Based Interceptors Rotation and Refurbishment																												
FTG-13																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Ground Based Interceptors 45 (2-Stage Fleet Avionics Upgrade/Obsolescence Program)																																
Ground Based Interceptors 46-49 (3-Stage Fleet Avionics Upgrade/Obsolescence Program)																																

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Ground Test Focused-04d (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	1	2011	1	2011
Ground Systems 6B.2	1	2011	1	2011
Ground Based Interceptors 34-36	1	2011	2	2011
Ground Test Integrated-04 (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	2	2011	2	2011
Flight Test Ground Based Midcourse Defense-09	3	2011	3	2011
Ground Based Interceptors 37-38	3	2011	4	2011
Ground Test Integrated-04 (EXE) (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	4	2011	4	2011
Ground Based Interceptors 39-41	1	2012	2	2012
Ground Test Distributed-04 (Full Ballistic Missile Defense System Distributed Test)	2	2012	2	2012
Ground Based Interceptors 42-44	3	2012	4	2012
Flight Test Ground Based Midcourse Defense-08 (Intercept Flight Test)	4	2012	4	2012
Fort Greely, Alaska Missile Field - 2	4	2012	4	2012
Flight Test Ground Based Midcourse Defense-08 Ground Based Interceptor	4	2012	4	2012
Ground Systems 8A	4	2012	4	2012
Ground Test Focused-05b (Strategic Focused Hardware-In-The-Loop Test)	1	2013	1	2013
Ground Test Integrated-05 (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	3	2013	3	2013

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Exhibit R-4A, RDT&E Schedule Details: 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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD08: <i>Ground Based Midcourse</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Ground Test Integrated-05 (EXE) (Full Ballistic Missile Defense System Hardware-In-The-Loop Test)	4	2013	4	2013
Flight Test Sensors-02 (Space Tracking & Surveillance System Demonstrator Flight Test)	1	2014	1	2014
Ground Test Distributed-05 (Full Ballistic Missile Defense System Distributed Test)	3	2014	3	2014
Flight Test Ground Based Midcourse Defense-11 (GMD Intercept Flight Test)	4	2014	4	2014
Ground Systems 10A	4	2014	4	2014
Ground Test-06 Campaign	2	2013	3	2015
EPOCH-2 (Ground Based Midcourse Defense/Aegis/Terminal High Altitude Area Defense/Patriot Multiple Engagement Flight Test)	3	2015	3	2015
Ground Based Interceptors Rotation and Refurbishment	1	2011	4	2015
FTG-13	4	2013	4	2013
Ground Based Interceptors 45 (2-Stage Fleet Avionics Upgrade/Obsolescence Program)	4	2014	4	2014
Ground Based Interceptors 46-49 (3-Stage Fleet Avionics Upgrade/Obsolescence Program)	1	2015	4	2015

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</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>	78.242	18.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	96.964
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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	78.242	18.722	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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	78.242	18.722	0.000	0.000	0.000

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
• 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
• 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

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD40: <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
<i>MD40: Program-Wide Support</i>	0.000	0.000	45.526	0.000	45.526	40.698	41.988	34.457	36.232	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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> NA <i>FY 2010 Plans:</i> NA	0.000	0.000	45.526	0.000	45.526

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD40: <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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	45.526	0.000	45.526

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
• 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
• 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

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

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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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</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	384.365	182.317	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	566.682
<i>WX19: Airborne Laser Capability Development</i>	368.514	177.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	546.015
<i>ZX40: Program-Wide Support</i>	15.851	4.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	20.667

Note

Beginning in FY 2011, the Boost Defense Segment Program Element, 0603883C, will be transferred to the Directed Energy Research Program Element, 0603901C.

The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities - weapons, sensors and Command and Control, Battle Management and Communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated Ballistic Missile Defense (BMD) capabilities draw on space-, land-, air-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile's location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack - all connected by a unifying C2BMC system. As a result, an effort funded in a Program Element may be critical to success of efforts in other Program Elements - these connections are referred to as "interdependencies". Throughout the budget justification material, we have attempted to highlight interdependencies in order to explain for fully the relationship between different parts of the proposed program.

A. Mission Description and Budget Item Justification

Program Element 0603883C, Boost Defense Segment (BDS), funds the Airborne Laser (ABL) element portions of the Ballistic Missile Defense System (BMDS). The ABL provides a capability to destroy ballistic missiles in the boost phase of their trajectory, the segment from post launch through propellant burnout. The boost phase typically includes the first 60-300 seconds of flight and concludes at altitudes between 20-450 kilometers. The ABL program is designing, building, and testing an airborne laser system with unique capabilities to provide boost-phase defense against ballistic missile threats by acquiring, tracking, and destroying ballistic missiles and to support the multi-tiered BMDS concept. ABL integrates three major subsystems (High Energy Laser [HEL]; Beam Control/Fire Control [BC/FC]; and Battle Management, Command, Control, Communications, Computers and Intelligence [BMC4I]) into a modified commercial 747 aircraft. ABL also includes ABL-specific ground support equipment.

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

APPROPRIATION/BUDGET ACTIVITY
0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE
PE 0603883C: *Ballistic Missile Defense Boost Defense Segment*

The primary mission of ABL is to significantly increase the overall defensive capability of the BMDS by destroying threat ballistic missiles in their boost phase, by reducing the number of targets faced by successive defenders, and by addressing certain threats that are difficult for other elements to counter. ABL is the primary boost-phase defense element being developed for the BMDS, uniquely adding the capability to destroy ballistic missiles from short to Intercontinental Ballistic Missile (ICBM) range during the boost phase. By destroying the missile during the boost phase, ABL negates the threat prior to its ability to deploy multiple reentry vehicles, submunitions, or countermeasures. Following successful engagement by ABL, warheads and engagement debris do not reach the intended target areas, with a reasonable probability that the threat missile debris will fall within the hostile country's own territory, reducing the possible effect of debris on protected areas and assets and perhaps serving as a deterrent. Secondary missions for an operational ABL will be to provide additional threat protection through early ballistic missile launch warning, launch site estimation, cueing to BMDS, and impact point prediction. Detecting and tracking a missile during its boost phase significantly improves accurate estimation of the launch point and therefore enhances the probability of a successful counterstrike against an aggressor's missile launchers. ABL's sensor capabilities further increase the robustness of the BMDS by enhancing the performance of other elements. In addition, ABL's mobility and speed-of-light engagement capability present adversaries with additional complexities when trying to develop or employ countermeasures. As an airborne platform with aerial refueling capability, ABL adds unique flexibility to deploy quickly to areas of interest and to adapt more readily to evolving situations that may threaten the US or its allies. Without ABL, MDA would have to address, in much less viable ways, both the expected proliferation of threats and the likely countermeasures adversaries may deploy against other BMDS elements.

The Airborne Laser (ABL) prototype is currently preparing to demonstrate the technology to destroy a boosting missile in flight. After the initial shoot down demonstration, ABL will test against missiles in flight at greater ranges and on the ground against countermeasures to fully characterize the ABL.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>
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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	400.751	186.697	0.000	0.000	0.000
Current President's Budget	384.365	182.317	0.000	0.000	0.000
Total Adjustments	-16.386	-4.380	0.000	0.000	0.000
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-4.380			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-9.779	0.000			
• SBIR/STTR Transfer	-5.957	0.000			
• Other Adjustment Detail	-0.650	0.000	0.000	0.000	0.000

Change Summary Explanation

The FY 2009 decrease of \$16.386M is due to SBIR/STTR transfers and MDA programmatic changes
No FY2011 data provided in PB10.

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</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
<i>WX19: Airborne Laser Capability Development</i>	368.514	177.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	546.015
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Beginning in FY 2011, the Boost Defense Segment Program Element, 0603883C, will be transferred to the Directed Energy Research Program Element, 0603901C.

For Ballistic Missile Defense (BMD) System Level Test Schedule information, please refer to the BMD System Level Test Schedule.

A. Mission Description and Budget Item Justification

The Airborne Laser's (ABL) revolutionary speed-of-light technology makes it a pathfinder for future directed energy weapon systems. The ABL program is testing an airborne laser system with unique capabilities to defend against ballistic missile threats by acquiring, tracking, and destroying ballistic missiles. The high-powered laser has been fired over 100 times on the ground and was installed on the ABL aircraft in FY 2008. The ABL has demonstrated precision tracking and atmospheric beam compensation during flight over 2 dozen times in FY 2007 and 2009 -- including successfully tracking against two boosting missiles in June 2009 and engaging against a low-power Missile Alternative Range Target Instrument (MARTI) boosting missile test asset in August 2009. The first high-powered lasing external to the aircraft in flight is scheduled for winter 2009 with the first shoot down against a short-range liquid fueled foreign acquired target scheduled for winter 2010. Engagement range for the ABL is dependent upon track illumination, atmospheric compensation, laser power and missile type. After the initial shoot down demonstration, ABL will test against missiles in flight at greater ranges and on the ground against countermeasures to fully characterize the ABL.

Current Program Knowledge Points (KPs) are:

Engagement against a Low Power Missile Alternative Range Target Instrument (MARTI) (KP#8) - This KP will validate and characterize Low Power (using the Surrogate High Energy Laser) ABL performance against boosting targets (completed Aug 09)

Demonstrate High Energy Laser (HEL) performance Internal/External on the Aircraft in Flight (KP#9) - This KP will demonstrate functionality of the optical system with the HEL on the aircraft in flight

Engagement against a High Power Missile Alternative Range Target Instrument (MARTI) (KP#10) - This KP will validate and characterize High Power (using the High Energy Laser) ABL performance against boosting targets

ABL Technology Demonstrator lethal demonstration (KP #11) - This KP will demonstrate ABL capability to negate a threat representative boosting ballistic missile.

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
<p>Following the ABL Technology Demonstrator lethal demonstration, additional lethal demonstration events will be conducted to further evaluate geometries and/or ranges of the current ABL configuration.</p> <p>Critical Engagement Conditions/Empirical Measurement Events (CECs/EMEs) are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations. ABL currently has five Critical Engagement Conditions (CECs) and five Empirical Measurement Events (EMEs) for Verification, Validation and Accreditation (VV&A) of Modeling and Simulation (M&S) that the program will begin to demonstrate in FY 2010. CECs include: Minimum/Maximum Slant Range (ABL to target range, helps to determine the capability to acquire and track a target and the energy lost in the beam path); High Turret Azimuth Angle (ABL to target azimuth angle, represents a condition to establish a baseline for applicable models); Staging Event (number of target stages, collects flight test data against a staging target); Low Target Reflectivity (determines the maximum standoff distance for the Tracking Illuminator Laser and for atmospheric compensation with the Beacon Illuminator Laser return); and Low Target Vulnerability to HEL Beam (laser lethality effects, determines how well the High Energy Laser propagation must be performed). EMEs include: Low Infrared (IR) Target Signature (determines range at which an engagement may be initiated); Multi-Target Engagement (stress the system's capability to sequentially move from one target to the next); Interoperability with the BMDS (demonstrates ABLs connectivity, integration, interfaces and interoperability with the BMDS); Operational Readiness Demonstration (determines ABL capability to deploy to and operate from an overseas location); and Weapon System Suitability (Determines the degree to which a system can be satisfactorily placed in field use) .</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. ABL Element level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides ABL participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution and management of ABL in BMD System testing in accordance with the BMDS Test Policy, MDA Directive 3202.03 (January 2009). This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>The BMD Digital Simulations Architecture (DSA) is the primary M&S System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support PA events, which provide critical system level performance data relative to all elements, system engineers, M&S developers, the OTA and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.</p> <p>B. Accomplishments/Planned Program (\$ in Millions)</p>		

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>First Airborne Laser</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Continued the program for developing the ;first Airborne Laser (ABL) technology demonstrator, to include completing the integration of the High Energy Laser modules onto the aircraft and initiation of the High Power System Integration phase of testing. The primary objectives of ground testing during the High Power System Integration phase was to demonstrate, verify, and characterize the 1st ABL technology demonstrator operations and performance, characterize functionality and performance of the entire ABL and verify the readiness of the ;first ABL technology demonstrator for High Power System Integration flight tests. The primary objective of the High Power System Integration flight test series is to build up to and accomplish Flight Test Laser-01 (FTL-01), the first test demonstrating ABL` s lethality capability, negating a threat-representative ballistic missile during the boost phase. The ABL program will also complete an affordability study to address life cycle cost of the system.</p> <p>Laser (\$30.4 million):</p> <p>Continued High Energy Laser data analysis in support of High Power Systems Integration ground and flight testing Continued aircraft engineering activities in support of the ABL ground and flight test activities</p> <p>Aircraft (\$4.1 million):</p> <p>Continued work on aircraft service bulletins to address deficiencies related to airworthiness/safety issues</p>	305.323	55.862	0.000	0.000	0.000

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Supported High Power System Integration, ground and flight testing</p> <p>Battle Management (\$9.7 million):</p> <p>Continued software support for High Power System Integration ground and flight test activities Performed ground functional testing of communication networks, predictive avoidance, mission planning, and the Link 16 data link Continued aircraft engineering activities in support of the ABL ground and flight test activities</p> <p>Beam Control/Fire Control (\$73.5 million):</p> <p>Supported High Power System Integration ground and flight test activities Supported Beam Control/Fire Control and High Energy Laser ground testing and data analysis Supported High Power System Integration flight demonstration data analysis to include pointing accuracy and jitter control analyses Continued engineering activities in support of the ABL ground and flight test activities Continued design, implementation and integration of system performance enhancements coupled with parallel improvements to simulation and system integration tool suites</p> <p>Air Vehicle Integration and Test (\$164.5 million):</p> <p>Completed ground testing of the High Energy Laser subsystem</p>					

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Completed ground testing with High Energy Laser, Beam Control/Fire Control, and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I) subsystems Continued ABL flight test program (multiple engagements culminating in negation of a boosting missile target)</p> <p>Program Management/System Engineering (\$22.6 million):</p> <p>Continued System Engineering and Structural Integrity, Quality Assurance, Safety, Hardware and System Analysis and Integration efforts, and Program and Contract Management support activities</p> <p>Other Support Activities (\$.5 million):</p> <p>Continued implementation of amended security requirements (updated security classification guidance and program protection directives) Continued investigation of low cost Active Ranging System (ARS) development alternatives to improve ABL tactical performance parameter estimates (launch point, impact point, track data, etc) Updated Adversary Data Package to support future BMDS capability</p> <p><i>FY 2010 Plans:</i> Planned Program (\$55.9 million)</p> <p>Conduct additional lethal demonstration events during 2nd and 3rd Quarters of FY 2010, followed by system characterization, support, and development activities</p>					

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Complete Tail 1 Technology Demonstrator development contract (closeout of contractual requirements) Verify the highest priority 1st ABL Technology Demonstrator contract technical requirements Prepare and deliver final data packages required by contract Conduct an affordability study to address life cycle cost of the system In FY 2010, the Critical Engagement Condition (CEC) and Empirical Measurement Event (EME) data for Verification, Validation, and Accreditation (VV&A) of Modeling and Simulation (M&S) is projected to increase from 0% at the beginning of FY 2010 to 28% at the end of FY 2010. CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Industrial Base See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Enhance the ABL specific industrial base with the focus on large optics, optical coatings and targeted manufacturing shortfalls for current and future ABL. Maintain and utilize an industrial base to ensure ABL unique personnel, facilities and processes are available to meet future ABL requirements. Provide a rapid response capability if a critical component is needed while addressing sparing and long lead requirements.</p>		5.262	3.970	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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continued development of advanced optics, coatings, and substrates to enable higher power/increased reliability laser operations Maintained optics testing capabilities while testing new optics, materials, and coatings to maintain ready spares/aircraft availability Continued improvements to bulkhead window production capability to enable higher power/longer and safer High Energy Laser (HEL) operations</p> <p><i>FY 2010 Plans:</i> Continue development of advanced optics, coatings, and substrates to enable higher power/increased reliability laser operations Maintain optics testing capabilities while testing new optics, materials, and coatings to maintain ready spares/aircraft availability Continue improvements to bulkhead window production capability to enable higher power/longer and safer High Energy Laser (HEL) operations</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Direct Support Activities See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Direct support activities include support for test activities involving ABL system characterization, and Adjunct Missions (AM). These activities also require support from the ABL Combined Test Force (CTF) to plan and execute ground and flight test activities, airborne and boosted diagnostics for flight</p>		57.929	23.045	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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>tests, and lethality and survivability assessment efforts. After demonstrating ABL's lethality capability (Flight Test Laser-01) and continuing through 3rd Quarter FY 2010, the ABL program will continue to demonstrate viability of the ABL by conducting additional lethal demonstration efforts followed by further system characterization.</p> <p>Combined Test Force (\$18.6 million):</p> <p>Planned for and supported High Power System Integration (HPSI) flight test activities Supported Airborne Diagnostic Target (ADT) development and test Supported and conducted flying operations for HPSI flight tests Planned for and supported flight test activities involving ABL participation in Ballistic Missile Defense System (BMDS) test events Planned for and supported test activities for the ABL Characterization and Capability Demonstration phase after the lethal demonstration ADT funding transferred to another test organization for acquisition and execution</p> <p>Lethality and Survivability (\$8.6 million)</p> <p>Continued subscale and full-scale lethality evaluation testing to support lethal demonstration and system envelope characterization flight test activities Continued intelligence, lethality data collection, assessments Conducted High Energy Laser System Test Facility (HELSTF) ground tests to support laser lethality effectiveness analysis efforts Began aircraft vulnerability assessments and investigations</p> <p>Diagnostics/Instrumentation (\$30.7 million):</p>					

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B. Accomplishments/Planned Program (\$ in Millions)											
<table border="1"><thead><tr><th style="width: 65%;"></th><th style="width: 10%;">FY 2009</th><th style="width: 10%;">FY 2010</th><th style="width: 10%;">FY 2011 Base</th><th style="width: 10%;">FY 2011 OCO</th><th style="width: 10%;">FY 2011 Total</th></tr></thead></table>							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total						
<p>Ensured dedicated Airborne Diagnostic Target (ADT) was available for use in HPSI flight tests and modified to provide required instrumentation capabilities</p> <p>Integrated and launched Terrier Lynx (or equivalent) target missiles for HPSI flight tests</p> <p>Continued fabrication, integration and testing of high power Missile Alternative Range Target Instrument (MARTI) diagnostic missiles</p> <p>Launched low power and high power MARTI diagnostic missiles for ABL performance characterization tests</p> <p><i>FY 2010 Plans:</i> Combined Test Force (\$13.1 million):</p> <p>Plan for and support ABL maintenance activities</p> <p>Plan for and support ground and flight test activities for the ABL Characterization and Capability Demonstration phase: system characterization and adjunct missions</p> <p>Create and present safety documents to the test wing safety review boards</p> <p>Lethality and Survivability (\$1.5 million)</p> <p>Continue intelligence, lethality data collection, assessments and evaluation</p> <p>Diagnostics/Instrumentation (\$8.4 million)</p> <p>Ensure dedicated Airborne Diagnostic Target (ADT) is available for use during additional flight tests in FY 2010</p> <p><i>FY 2011 Base Plans:</i> N/A</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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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 2011 OCO Plans:</i> NA</p>					
<p>Characterization and Capability Demonstration</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> After the ABL lethal demonstration (Flight Test Laser-01) and continuing through 3rd quarter FY 2010, the ABL program will continue to demonstrate viability of the ABL by conducting additional lethal demonstration efforts followed by further system characterization, support and development activities. The ABL will continue ground testing to gain knowledge of the capability of the system. ABL will perform product requirements analysis/derivation, design, development, testing and delivery of verified Modeling and Simulation tools in support of Ballistic Missile Defense System events. The program will consolidate engineering and operations data and evaluate and characterize system capabilities.</p> <p>Conduct additional lethal demonstration events through 3rd Quarter FY 2010 to further evaluate geometries and/or ranges of the current ABL configuration (\$28.7 million)</p> <p>In FY 2010, the Critical Engagement Condition (CEC) and Empirical Measurement Event (EME) data for Verification, Validation and Accreditation (VV&A) of Modeling and Simulation (M&S) is projected to increase from 0% at the beginning of FY 2010 to 28% at the end of FY 2010. CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p>	0.000	94.624	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>Maintain ABL chemical operations and initiate post lethal demonstration ground test program to further characterize performance (\$6.0 million):</p> <p>Initiate High Energy Laser power tuning/optimization testing, for increases in High Energy Laser power to provide a longer range kill capability Initiate wavefront analysis to provide a longer range kill capability Initiate Beam Control/Fire Control adjustments to improve jitter and pointing accuracy</p> <p>Conduct sustainment activities to maintain the ABL (\$59.9 million):</p> <p>Sustain the ABL (Laser, Beam Control/Fire Control, and Battle Management subsystems) Provide Quality Safety and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety and reliability Continue implementation of ABL program security requirements Publish Adversary Data Package Addenda reflecting intelligence assessment updates Produce and update threat data to support demonstration of Airborne Laser (ABL) capability to destroy a boosting missile flight</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	368.514	177.501	0.000	0.000	0.000

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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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>
• 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
• 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

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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The ABL program through FY 2010 proves our ability to destroy ballistic missiles in the boost phase of their trajectory. The ABL program is testing an airborne laser system with unique capabilities to defend against ballistic missile threats by acquiring, tracking, and destroying ballistic missiles.

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 focus areas. 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.

Beginning in FY 2011, the Boost Defense Segment Program Element, 0603883C, will be transferred to the Directed Energy Research Program Element, 0603901C.

E. Performance Metrics

NA

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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			
First Airborne Laser Prime Contract WX19	C/CPAF	The Boeing Company Seattle, WA	653.047	36.862	Apr 2010	0.000		0.000		0.000	0	689.909	689.909
First Airborne Laser BMDS Security WX19	C/CPAF	The Boeing Company Seattle, WA	1.915	0.000		0.000		0.000		0.000	0	1.915	1.915
First Airborne Laser Technical Support Costs-1 WX19	C/CPAF	Northrop Grumman Kirtland AFB/ Various	40.293	6.000	Apr 2010	0.000		0.000		0.000	0	46.293	46.293
First Airborne Laser FFRDC Support WX19	TBD/TBD	Aerospace Kirtland AFB	2.460	0.000		0.000		0.000		0.000	0	2.460	2.460
First Airborne Laser Technical Support Costs-2 WX19	TBD/TBD	Tecolote Research Kirtland AFB	3.158	0.000		0.000		0.000		0.000	0	3.158	3.158
First Airborne Laser Logistics Costs WX19	C/CPAF	The Boeing Company Seattle, WA, Tyndall AFB FL, KAFB NM	2.080	0.000		0.000		0.000		0.000	0	2.080	2.080
First Airborne Laser Government and Other Support Costs WX19	TBD/TBD	AFRL Kirtland AFB/MA, Multiple	2.908	0.000		0.000		0.000		0.000	0	2.908	2.908
First Airborne Laser Government and Other Costs-1 WX19	C/FP	ABL SPO Kirtland AFB/ Multiple	5.179	0.000		0.000		0.000		0.000	0	5.179	5.179
	TBD/TBD	ACC	0.717	0.000		0.000		0.000		0.000	0	0.717	0.717

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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			
First Airborne Laser Government and Other Costs-2 WX19		VA											
First Airborne Laser Government and Other Costs-3 WX19	TBD/TBD	Brooks City Base TX	0.625	0.000		0.000		0.000		0.000	0	0.625	0.625
First Airborne Laser Other Support Costs WX19	TBD/TBD	Tyndall AFB FL	0.260	0.000		0.000		0.000		0.000	0	0.260	0.260
First Airborne Laser CCMWG/Program Integration Support WX19	C/CPAF	The Boeing Company Seattle, WA	3.734	0.000		0.000		0.000		0.000	0	3.734	3.734
First Airborne Laser Active Ranging System WX19	TBD/TBD	ESC Hanscom AFB MA	3.000	0.000		0.000		0.000		0.000	0	3.000	3.000
First Airborne Laser Technical Support Costs-3 WX19	C/Various	KAFB/WPAFB Multiple	0.476	0.000		0.000		0.000		0.000	0	0.476	0.476
First Airborne Laser Common Threat WX19	Various/ Various	Multiple Multiple	1.862	0.000		0.000		0.000		0.000	0	1.862	1.862
First Airborne Laser Cost Affordability/Risk Reduction WX19	C/CPAF	The Boeing Company Seattle, WA	0.000	3.000	Apr 2010	0.000		0.000		0.000	0	3.000	3.000
First Airborne Laser BMDS Level Testing WX19	C/CPAF	The Boeing Company Seattle, WA	0.000	10.000	Oct 2009	0.000		0.000		0.000	0	10.000	10.000

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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			
Industrial Base Contract WX19	TBD/TBD	Multiple, i.e. Lockheed Martin/ Multiple MD, CA	11.678	3.970	Apr 2010	0.000		0.000		0.000	0	15.648	15.684
Characterization and Capability Demonstration Prime Contract WX19	C/CPAF	The Boeing Company Seattle, WA	0.000	35.580	Jan 2010	0.000		0.000		0.000	0	35.580	35.580
Characterization and Capability Demonstration BMDS Security WX19	C/CPAF	The Boeing Company Seattle, WA	0.000	0.040	Jan 2010	0.000		0.000		0.000	0	0.040	0.040
Characterization and Capability Demonstration Technical Support Costs-1 WX19	C/CPAF	Northrup Grumman Kirtland AFB/ Various	0.000	4.151	Jan 2010	0.000		0.000		0.000	0	4.151	4.151
Characterization and Capability Demonstration Government and Other Support Costs-1 WX19	TBD/TBD	AFRL Kirtland AFB/MA, Multiple	0.000	0.225	Oct 2009	0.000		0.000		0.000	0	0.225	0.225
Characterization and Capability Demonstration Government and Other Support Costs-2 WX19	C/FP	ABL SPO Kirtland AFB, Multiple	0.000	1.701	Oct 2009	0.000		0.000		0.000	0	1.701	1.701
Characterization and Capability	TBD/TBD	ACC, Brooks City Base	0.000	0.325	Jan 2010	0.000		0.000		0.000	0	0.325	0.325

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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			
Demonstration Government and Other Support Costs-3 WX19		VA, TX											
Characterization and Capability Demonstration FFRDC Support WX19	TBD/TBD	Aerospace KAFB	0.000	1.200	Oct 2009	0.000		0.000		0.000	0	1.200	1.200
Characterization and Capability Demonstration Technical Support Costs-2 WX19	TBD/TBD	Tecolote Research KAFB	0.000	0.670	Jan 2010	0.000		0.000		0.000	0	0.670	0.670
Characterization and Capability Demonstration Common Threat WX19	TBD/TBD	Multiple Multiple	0.000	0.677	Jul 2010	0.000		0.000		0.000	0	0.677	0.677
Characterization and Capability Demonstration BMDS Level Testing WX19	C/CPAF	The Boeing Company Seattle, WA	0.000	50.055	Jan 2010	0.000		0.000		0.000	0	50.055	50.055
Subtotal			733.392	154.456		0.000		0.000		0.000	0.000	887.848	887.884

Remarks
Common threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense (BMD) System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also used to develop the BMD System Description Document and BMD System Specification.

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser 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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Direct Support Activities BMDs Level Testing - Combined Test Force WX19	TBD/TBD	AFFTC Edwards AFB	41.375	13.120	Jan 2010	0.000		0.000		0.000	0	54.495	54.495
Direct Support Activities BMDs Level Testing - Lethality and Survivability WX19	TBD/TBD	AFRL Eglin AFB/NM, FL	24.834	1.500	Jan 2010	0.000		0.000		0.000	0	26.334	26.334
Direct Support Activities BMDs Level Testing - Diagnostics/ Instrumentation WX19	TBD/TBD	Hanscom AFB, Peterson AFB, Hill AFB, Kirtland AFB MA, CO, UT, NM	47.267	8.425	Jan 2010	0.000		0.000		0.000	0	55.692	55.692
Subtotal			113.476	23.045		0.000		0.000		0.000	0.000	136.521	136.521

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>
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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			

Remarks
Targets funding transitioned to the Targets and Countermeasures Program Element beginning in FY 2009.

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	Cost	Cost	Cost
	846.868	177.501		0.000		0.000		0.000	0.000	1,024.369	1,024.405

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Engagement of Low Power Missile Alternative Range Target Instrument				■																								
Complete High Power System Integration Ground Testing						■																						
Demonstrate High Energy Laser Performance in Flight						■																						
Engagement of High Power Missile Alternative Range Target Instrument						■																						
Complete High Power System Integration Flight Testing							■																					
1st ABL Lethal Demonstration - ABL Intercept Flight Test (01)							■																					
Engagement of Second High Power Missile Alternative Range Target Instrument								■																				
Complete Life Cycle Affordability Study											■																	
ABL Intercept Flight Test (02)								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT WX19: <i>Airborne Laser Capability Development</i>

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Engagement of Low Power Missile Alternative Range Target Instrument	4	2009	4	2009
Complete High Power System Integration Ground Testing	1	2010	1	2010
Demonstrate High Energy Laser Performance in Flight	1	2010	1	2010
Engagement of High Power Missile Alternative Range Target Instrument	1	2010	1	2010
Complete High Power System Integration Flight Testing	2	2010	2	2010
1st ABL Lethal Demonstration - ABL Intercept Flight Test (01)	2	2010	2	2010
Engagement of Second High Power Missile Alternative Range Target Instrument	3	2010	3	2010
Complete Life Cycle Affordability Study	4	2010	4	2010
ABL Intercept Flight Test (02)	3	2010	3	2010

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</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>	15.851	4.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	20.667
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	15.851	4.816	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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</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
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	15.851	4.816	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
• 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

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603883C: <i>Ballistic Missile Defense Boost Defense Segment</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>											
• 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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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 0603884C: <i>Ballistic Missile Defense Sensors</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	682.754	621.017	454.859	0.000	454.859	469.589	681.397	650.525	616.342	0	4,176.483
AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	2.697
BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>	71.950	3.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	75.123
CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>	110.486	12.379	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	122.865
EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>	128.838	91.893	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	220.731
WX11: <i>Ballistic Missile Defense Radars Capability Development</i>	194.532	318.854	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	513.386
XX11: <i>Ballistic Missile Defense Radars Sustainment</i>	129.649	159.611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	289.260
MD11: <i>BMDs Radars</i>	0.000	0.000	440.023	0.000	440.023	452.561	659.538	630.408	595.040	Continuing	Continuing
ZX40: <i>Program-Wide Support</i>	44.602	35.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	79.709
MD40: <i>Program-Wide Support</i>	0.000	0.000	14.836	0.000	14.836	17.028	21.859	20.117	21.302	Continuing	Continuing

Note

Since its emphasis is on proving component and subsystem maturity prior to integration into a more complex integrated system, the Sensors program falls under RDT&E Budget Activity 4, Advanced Component Development and Prototypes (ACD&P).

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX11, BX11, CX11, EX11, WX11, and XX11 for FY 2009-FY 2010 is now captured in Project MD11.

For all BMD System Level Test Schedule information, please refer to the BMD System Level Test Schedule.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603884C: <i>Ballistic Missile Defense Sensors</i>
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MDA has a set of Unifying Missile Defense Functions (UMDFs), which increase the effectiveness of the BMD System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These UMDF efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). UMDFs are implemented across the BMDS elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.

Sensors software development efforts will add system capabilities in compliance with BMDS Integrated Build C and D specifications for enhanced sensor capabilities to support both Regional and Strategic missions. For BMDS Integrated Build C, these capabilities include integration of Hercules Suite I algorithms, and support for C2BMC taskings such as sensor resource management. For BMDS Integrated Build D, these capabilities include improved sensor registration, integration of discrimination enhancements, and support for C2BMC correlation and sensor management improvements. In FY 2010 and FY 2011, these builds, in Capability Increments C1 and D1, will provide System-level sensor resource management with track forwarding in support of Regional and Strategic Missions (C1), limited peer-to-peer weapon system engagement coordination in support of Regional missions (C1), and enhanced BMDS capability with increased defended area and integration of System-level sensor and BMDS System Track data (D1).

The FY 2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated BMDS architecture to counter existing regional threats; continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

A. Mission Description and Budget Item Justification

Given the unique characteristics of short-range, medium-range, intermediate-range, and intercontinental ballistic missiles (SRBMs, MRBMs, IRBMs, and ICBMs), no one missile defense interceptor or sensor system can effectively counter all ballistic missile threats. Warfighters are not only faced with the challenge of intercepting relatively small objects at great distances and very high velocities, but they may have to counter large raid sizes involving combinations of SRBMs, MRBMs, IRBMs, and ICBMs and, in the future, countermeasures associated with structured ballistic missile attacks. Stand-alone missile defense systems must be integrated into a layered BMDS to achieve cost and operational efficiencies, while improving protection performance with increased defended area and minimizing force structure costs.

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>
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The most operationally effective missile defense architecture is a layering of endoatmospheric and exoatmospheric missile interceptor systems with ground and space sensors connected and managed by a robust Command and Control, Battle Management and Communication (C2BMC) infrastructure. The FY 2011 program is balanced to develop, rigorously test, and field an integrated BMDS architecture to counter existing regional threats, continue developing our limited ICBM defense, prove our Missile Defense System works, and develop new technologies to address future threats. The current program has four focus areas:

1. Enhance missile defense to defend deployed forces, allies, and friends against theater threats
2. Continue a viable homeland defense against rogue threats beyond 2030
3. Prove missile defense works
4. Develop technologies to hedge against future missile threat growth

THE KEY ENABLER FOR THESE FOCUS AREAS IS A PERVASIVE SENSOR NET.

BMDS effectiveness depends upon the quality of services (that is, data of sufficient accuracy and low enough latency) rendered by the interdependent BMDS programs to each other. The BMD Sensors program provides essential data for the command and control of BMDS weapon systems, such as Terminal High Altitude Area Defense (THAAD) and Groundbased Midcourse Defense (GMD). These sensors, connected to the BMDS through C2BMC, enable detection and tracking of targets, and provide fire-control quality ballistic missile position, velocity, and discrimination data to BMDS weapon systems. As threats expand and mature, the need for continuously available sensors supports investment in the operations, sustainment, and enhancement of existing radars, as well as the development of new sensors, such as the Precision Tracking Space System (PTSS). The Ballistic Missile Defense System (BMDS) development approach allows sensor technologies and capabilities to be incorporated as they mature and evolve into a layered network of sensors. Overlapping sensor coverage with a diversity of sensor types will improve detection, track, discrimination and kill assessments. The extended sensor coverage and accuracy provided by a network of layered sensors makes the BMDS more efficient, reduces the number of target engagements needed, conserving interceptor inventory and ensuring a high probability of successful engagement.

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>
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The BMD Sensors Program contributes to all four missile defense focus areas as follows:

ENHANCE REGIONAL DEFENSE

Development, delivery and deployment of AN/TPY-2 radars for either forward-based or THAAD Fire Unit use to meet warfighter needs
Operations and sustainment of deployed AN/TPY-2 radars in Japan, Israel, and other locations (to be determined)

AN/TPY-2 radars can be configured to operate either as a THAAD Fire Unit Radar (terminal mode) or Forward-Based Radar. These radars are transportable, adding flexibility to respond to geographical changes in threats. Under this Program Element, four AN/TPY-2 radars have completed manufacturing (AN/TPY-2 #2, 3, 5, and 6), and one is in production (AN/TPY-2 #7). The AN/TPY-2 used in a forward-based role provides detection and tracking during the boost phase. This significantly reduces the uncertainty in target discrimination and reaction time, increasing the probability of a successful BMDS engagement. The AN/TPY-2 used in terminal mode as a Fire Unit Radar (FUR) is an integral component of the Terminal High Altitude Area Defense (THAAD) Battery. The FUR is capable of tracking multiple threats and multiple interceptors during engagements in the terminal phase. It provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The current and planned utilization of the AN/TPY-2 radars supports US STRATCOM, COCOMs, THAAD, and the Aegis BMD weapon system. Currently, AN/TPY-2 radars are supporting missile defense in both Japan and Israel.

BMDS regional defense includes the Phased Adaptive Approach (PAA). This approach was developed in response to the rapid proliferation of short and medium range ballistic missiles in Iran and the threat they pose to U.S. Allies and partners, as well as to U.S. deployed personnel and their accompanying families in the Middle East and in Europe. By leveraging recent advances in sensor and interceptor technologies, the United States will aggressively counter this growing regional threat with a more powerful and agile system. The United States is pursuing a four phased approach which will provide a more effective missile defense capability for defense of NATO territories and enhance U.S. homeland defense. It will be complementary of and interoperable with those being developed by NATO, be applicable in other theaters around the world, and will be more adaptable and flexible in order to counter threat advances and provide increased defended areas over time. The initial phase includes the deployment of current and proven missile defense, including the sea-based Aegis Weapons System, the SM-3 interceptor (Block IA), and sensors such as the forward-based Army Navy/Transportable Radar Surveillance system (AN/TPY-2). Subsequent phases will be implemented based on technical maturity, appropriate testing, and threat driven requirements.

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603884C: <i>Ballistic Missile Defense Sensors</i>

The BMDS Sensors regional defense program also includes the Groundbased Radar - Prototype (GBR-P) -- a large, steerable, X-band phased array radar currently located at the Reagan Test Site, Kwajalein Atoll. This radar is currently maintained in caretaker status and is available to support BMDS testing and X-Band software development efforts.

CONTINUE VIABLE HOMELAND DEFENSE

Operations and sustainment of the Sea-Based X-Band Radar (SBX) and UEWR's at Thule, Beale, and Fylingdales
Operations and sustainment of the COBRA DANE radar
Upgrade of the Thule Early Warning Radar (EWR) to add missile defense capability to this sensor
Initial and refined design for upgrade of the Clear, AK Early Warning Radar beginning in FY11.

The Thule Early Warning Radar (EWR) located at Thule Air Base, Greenland, is an Ultra High Frequency (UHF) radar that is being upgraded to include missile defense functionality. This capability will expand defense of the U.S. to include defense against limited Iranian long-range threats.

The radars located at Beale Air Force Base (AFB), CA, and RAF Fylingdales, UK, are UHF radars that are completing their upgrades for Missile Defense to the UEWR configuration. The COBRA DANE radar located at Eareckson AFS, Shemya, Alaska (AK) is also part of the BMDS Homeland Defense architecture.

PROVE MISSILE DEFENSE

Participation in BMDS flight and ground test campaigns
Modeling and simulation efforts to include: enhanced sensor models, development of RF scene generators, integration of digital simulations into the BMDS modeling and simulation architecture, and verification, validation, and accreditation (VV&A) of radar models
Development and implementation of Concurrent, Test, Training, and Operations (CTTO) capabilities

HEDGE AGAINST FUTURE THREATS

System engineering, and software development and testing support

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603884C: <i>Ballistic Missile Defense Sensors</i>

Development of radar discrimination advanced algorithms and Common X-Band software for TPY-2 radars to address evolving threats
 Implementation of BMDS Unifying Missile Defense Functions (UMDF) to improve BMDS efficiency and effectiveness
 Operations and support of the External Sensors Lab (ESL) -- a research and development lab critical to researching potential capabilities gained from sensors external to the BMDS

As new sensor data sources are brought into the External Sensors Lab (ESL), the overall performance of existing capabilities are improved and new capabilities for the BMDS are discovered. Algorithms developed by ESL will contribute to precision radar cueing, system track, and hit/kill assessment. Precision radar cueing by ESL has been successfully demonstrated several times during flight testing. ESL provides engineering-level code to the C2BMC program for maturing the algorithms into robust, operationally suitable code.

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	767.593	636.856	0.000	0.000	0.000
Current President's Budget	682.754	621.017	454.859	0.000	454.859
Total Adjustments	-84.839	-15.839	454.859	0.000	454.859
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-15.839			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-9.120	0.000			
• SBIR/STTR Transfer	-11.155	0.000			
• Other Adjustment Detail	-64.564	0.000	454.859	0.000	454.859

Change Summary Explanation

FY 2009 decreases include SBIR/STTR transfers, MDA adjustments, and rescissions external to the Agency. European Midcourse Radar (EMR) funding is moved to the new EMR PE 0603909C for FY 2009 and to the new European Capability PE 0603911C for FY 2010.

No FY 2011 data provided in PB10. ;

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603884C: <i>Ballistic Missile Defense Sensors</i>				AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>				
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
AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	2.697
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

Ballistic Missile Defense Radars (BMDS) Project AX11 defends the U.S. from limited North Korean long-range threats. This effort funds the Commercial Power Project supporting AN/TPY-2 #2 Forward Based Radar in Shariki, Japan. It will provide commercial power as the primary power source.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
AN/TPY-2 #2 Commercial Power See Description Below <i>FY 2009 Accomplishments:</i> Japanese completed installation of power lines from substation to radar site Completed site construction to support power equipment installation Completed Commercial Power installation and checkout <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA	2.697	0.000	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	2.697	0.000	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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

The Consolidated - Contractor Logistics Support (C-CLS) contract was awarded in FY 2008 to operate and maintain the AN/TPY-2 radars and provide logistical support for other radars in the BMDS Radars PE. The C-CLS contract provides the operations and support activities required for site surveys, planning, relocation, depot maintenance, forward-based system operations, repair, and replacement. The contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract.

E. Performance Metrics

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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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			
AN/TPY-2 #2 Commercial Power AN/TPY-2 #2 - Commercial Power AX11	SS/Various	Raytheon MA	2.697	0.000		0.000		0.000		0.000	0	2.697	Continuing
Subtotal			2.697	0.000		0.000		0.000		0.000	0.000	2.697	

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
	2.697	0.000		0.000		0.000		0.000	0.000	2.697	

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Complete Power Upgrade for AN/TPY-2 #2				■																												

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT AX11: <i>Ballistic Missile Defense Radars Block 1.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Complete Power Upgrade for AN/TPY-2 #2	4	2009	4	2009

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</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
<i>BX11: Ballistic Missile Defense Radars Block 2.0</i>	71.950	3.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	75.123
Quantity of RDT&E Articles	0	1	0	0	0	0	0	0	0		

Note

RDT&E Articles: AN/TPY-2 #7 radar production began in FY 2007 and will be delivered to MDA in FY 2010.

A. Mission Description and Budget Item Justification

Sensors Project BX11 provides funding to manufacture, test, and deliver AN/TPY-2 #7 to support the Terminal High Altitude Area Defense (THAAD) Fire Units #2.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
AN/TPY-2 #7 See Description Below <i>FY 2009 Accomplishments:</i> Continued manufacturing and integration of Radar Antenna Continued manufacturing of other Radar Components (Electronics Equipment Unit (EEU), Cooling Equipment Unit (CEU), and Prime Power Units (PPUs)) Delivered two Prime Power Units (PPUs) for Army New Equipment Training <i>FY 2010 Plans:</i> Complete radar component integration and check-out Deliver AN/TPY-2 #7 and four Prime Power Units (PPUs) for Theater High Altitude Area Defense (THAAD) Fire Unit Radars (FUR) ;	71.950	3.173	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	71.950	3.173	0.000	0.000	0.000

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
• 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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

The BMDS Sensors contract supports X-Band Sensor Development and acquisition of AN/TPY-2 radars. The development effort focuses on discrimination enhancements as well as the development of Common Software for X-Band Radars under a ``Cost Plus Award Fee (CPAF)`` CLIN. Manufacturing of AN/PY-2 #7 and four PPU's is being done on a ``Cost Plus Incentive Fee (CPIF)`` CLIN.

E. Performance Metrics

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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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			
AN/TPY-2 #7 AN/TPY-2 #7 Manufacture BX11	SS/CPAF	Raytheon MA	71.950	3.173	Oct 2009	0.000		0.000		0.000	0	75.123	Continuing
Subtotal			71.950	3.173		0.000		0.000		0.000	0.000	75.123	

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	71.950	3.173		0.000		0.000		0.000	0.000	75.123	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Deliver Prime Power Unit (PPU) #3						■																						
Deliver PPU #4							■																					
Deliver PPU #5							■																					
Manufacture AN/TPY-2 #7 Hardware Complete							■																					
Deliver PPU #6								■																				
AN/TPY-2 #7 Delivery to THAAD								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT BX11: <i>Ballistic Missile Defense Radars Block 2.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Deliver Prime Power Unit (PPU) #3	2	2010	2	2010
Deliver PPU #4	3	2010	3	2010
Deliver PPU #5	3	2010	3	2010
Manufacture AN/TPY-2 #7 Hardware Complete	3	2010	3	2010
Deliver PPU #6	4	2010	4	2010
AN/TPY-2 #7 Delivery to THAAD	4	2010	4	2010

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603884C: <i>Ballistic Missile Defense Sensors</i>				CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>				
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
CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>	110.486	12.379	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	122.865
Quantity of RDT&E Articles	0	1	0	0	0	0	0	0	0		

Note

RDT&E Article: The Thule Upgraded Early Warning Radar (UEWR) effort began in FY 2006 and will be completed in FY 2010.

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense (BMD) Sensors Project CX11 effort expands defense of the U.S. to include defense against limited Iranian long-range threats. This project includes the upgrade of Thule Early Warning Radar (EWR), the insertion of advanced algorithms into AN/TPY-2 software to enhance discrimination capabilities in X-Band radars, and enhancements to the sensors through the Unifying Missile Defense Functions. The Thule EWR upgrade will be delivered in FY 2010 and will maintain a common configuration with the Beale AFB, CA, and RAF Fylingdales, UK upgrades. These upgrades include hardware and software modifications that enhance capabilities and integrate these Upgraded Early Warning Radars (UEWRs) into the BMDS Architecture. The addition of Thule UEWR into the BMDS sensor architecture will improve BMDS sensor coverage and provide new engagement options against long range missile threats from Iran. Discrimination efforts provide for the development of advanced algorithms, and the integration and verification of enhanced capability. These efforts also support the Unified Missile Defense Functions in the implementation of system wide enhancements to increase the probability of a successful engagement.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Thule Early Warning Radar Upgrade See Description Below <i>FY 2009 Accomplishments:</i> Conducted BMDS Integration testing Completed hardware and software installations	69.106	0.000	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Completed Thule UEWR development test and evaluation Conducted operational test Force Developers Evaluation (FDE) Completed Thule Op's Acceptance by USAF</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>						
<p>Migration to DISN, Long-Haul Comms See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Supported migration of MDA's primary mission communications transport onto the DISA Defense Information Systems Network (DISN) Continued replacement of Long-Haul Communications (LHC) transport services between GMD nodes and sensors</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p>		24.800	0.000	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Radar Discrimination Capability Common Advanced Algorithm Insertion See Description Below <i>FY 2009 Accomplishments:</i> Conducted Validation and Verification of near-term discrimination Initiated design of advanced discrimination algorithms Commenced prototype development of integrated discrimination <i>FY 2010 Plans:</i> Assess near-term discrimination response in ground test campaigns GTI-04 and GTD-04 Participate in Performance Assessments (PA-09, PA-10) Evaluate common software capability release CR-2.4 performance using targets of opportunity Integrate prototype designs into TPY-2 digital representation <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA		16.580	12.379	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		110.486	12.379	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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
• 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
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• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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R-1 Line Item #79

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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>
• 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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

A sole source contract was awarded for the procurement and installation of the Thule Early Warning Radar hardware and software upgrade kits. The contract has Firm Fixed Price (FFP) and Cost Plus Award Fee (CPAF) CLINs. The AN/TPY-2 project uses an existing radar design to minimize development costs and schedule. Design enhancements focus on software changes that provide advanced algorithms for radar discrimination. The AN-TPY-2 is a Cost Plus Award Fee (CPAF) contract.

E. Performance Metrics

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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			
Thule Early Warning Radar Upgrade Prime Contractor CX11	SS/CPAF	Raytheon MA	40.082	0.000		0.000		0.000		0.000	0	40.082	Continuing
Thule Early Warning Radar Upgrade Site Activation, Management, Lodging, ISA Services, Transportation CX11	TBD/TBD	MDA-DFW AL	4.373	0.000		0.000		0.000		0.000	0	4.373	Continuing
Thule Early Warning Radar Upgrade Embedded Test, Engineering Services, GCN Connectivity, SSCO, Lab Upgrades CX11	SS/CPAF	Boeing CA, AL	6.997	0.000		0.000		0.000		0.000	0	6.997	Continuing
Thule Early Warning Radar Upgrade Integration/Support CX11	TBD/TBD	850 ELSG MA	2.701	0.000		0.000		0.000		0.000	0	2.701	Continuing
Thule Early Warning Radar Upgrade S/W Deployment & Transition Support CX11	TBD/TBD	ITT Sensor CO	3.076	0.000		0.000		0.000		0.000	0	3.076	Continuing
Thule Early Warning Radar Upgrade Thule UEWR - C2 High Altitude EMP Room CX11	TBD/TBD	DISA VA	2.002	0.000		0.000		0.000		0.000	0	2.002	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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			
Thule Early Warning Radar Upgrade Thule Communications Equipment CX11	TBD/TBD	DISA MO	9.875	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Communications Migration Migration to DISN, Long-Haul Comms CX11	TBD/TBD	DISA VA	24.800	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar Discrimination Capability Common Advanced Algorithm Insertion Near/Far Term Discrimination Efforts CX11	C/CPAF	Raytheon MA	16.580	12.379	Oct 2009	0.000		0.000		0.000	0	28.959	Continuing
Subtotal			110.486	12.379		0.000		0.000		0.000			

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</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			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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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
Project Cost Totals	110.486	12.379	0.000	0.000	0.000			

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Complete Thule UEWR DT&E		■																										
Thule Ops Acceptance by USAF				■																								
Performance Assessment PA09						■																						
Conduct V&V of CR-2.4							■	■		■																		
Performance Assessment PA10								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT CX11: <i>Ballistic Missile Defense Radars Block 3.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Complete Thule UEWR DT&E	2	2009	2	2009
Thule Ops Acceptance by USAF	4	2009	4	2009
Performance Assessment PA09	1	2010	1	2010
Conduct V&V of CR-2.4	2	2010	4	2010
Performance Assessment PA10	4	2010	4	2010

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</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
EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>	128.838	91.893	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	220.731
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

Project EX11 efforts expand defense of allies and deployed forces from short-to-intermediate-range threats in two regions/theaters. Specifically, the BMD Radars Project EX11 effort provides for:

- Deployment and site activation for AN/TPY-2 #3 forward-based radar
- Continue manufacture of transportable Ballistic Missile Defense System (BMDS) Communications System Complex (BCSC-T), High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN), or the C2BMC Deployable Interface Node (CDIN) as required to support deployment of AN/TPY-2 forward-based radar sites
- Continue development of the Ballistic Missile Defense Systems (BMDS) Communications Networks (BCN) to support radar communications
- Continue development of a HBCN and CDIN BCN support system that will fulfill requirements for a rapidly deployable re-configurable BMDS communications suite
- Continue Program Management support across PE 0603884C. It provides for civilian salaries and travel. In addition, it provides other technical and business operations support services, technical oversight, and performance analysis provided by Federally Funded Research and Development Centers (FFRDCs), University Applied Research Centers (UARCs), and Advisory & Assistance services

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
AN/TPY-2 C2BMC Fielding See Description Below	58.611	34.937	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
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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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></p> <p>The C2BMC program provides network communications to both task AN/TPY-2 radars and pass radar data to BMDS elements. The Ballistic Missile Defense Systems (BMDS) Communications Networks (BCN) provides a survivable, robust, diverse and redundant, end-to-end, high availability operational communications network (COMNET) connectivity that quickly and unambiguously shares information across the global Ballistic Missile Defense System. The BCN will standardize the BMDS communication systems capabilities at all BMDS locations.</p> <p>The transportable BMDS Communications System Complex (BCSC) locations are designated BCSC - Transportable (BCSC-T) to facilitate the transportability inherent with the radars and engagement management facilities it supports. The BCSC-T will be survivable in accordance with the BMDS Core Standards, especially MDA-STD-001. In addition to the BCSC-T, MDA needs to have a rapidly deployable, re-configurable BMDS communications suite to meet the short term specific needs of MDA missions. The High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN) and the C2BMC Deployable Interface Node (CDIN), a transit case BCN support system, will fulfill this requirement for deployable re-configurable BMDS communications suites.</p> <p>The HBCN is an integrated communication suite consisting of two customized HMMWVs and a Tactical Operations Center (TOC). Its purpose is to enable communications between AN/TPY-2 Radar and the C2BMC suite and the rest of the BMDS. The HBCN contains both mission communication equipment and campus communication equipment. One HMMWV will be dedicated to providing the mission communications consisting of a High Availability Communication Node Equipment (HACNE) C2BMC Network Interface Processor (CNIP) and other supporting equipment. The other HMMWV will be dedicated to providing the campus communications consisting of Defense Information Services Network (DISN) Service Delivery Node, Defense Red Switch Network (DRSN), Secret Internet Protocol Router Network (SIPRNET), Non-secure Internet Protocol Router Network (NIPRNET), organic Satellite Communications (SATCOM) and SATCOM interface. All operations can be performed</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>within the HMMWVs or be remoted in a TOC. The TOC is an expandable 20`x20` room capable of supporting the C2BMC operators.</p> <p>The CDIN durable military transit case Ballistic Missile Defense Systems (BMDS) Communications Networks (BCN) support system is both vehicle and facility independent. However, even though it is facility independent it must be installed in some kind of a shelter or building. The recommended facility is the expandable TOC identified for the High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN). The CDIN system will be capable of providing the mission and campus communications for a rapidly deployed AN/TPY-2 Radar.</p> <p>Also, the Extremely High Frequency (EHF) Teleports will be upgraded to provide AN/TPY-2 data to Ground Based Midcourse (GMD) and Aegis engagements to alleviate the vulnerability of Ultra High Frequency (UHF) communications. This satisfies a Combatant Command (COCOM) requirement for EHF operational capability due to continuous issues with UHF communications supporting the BMDS mission. Locations: United States -- Northwest, VA; Wahiawa, HI. International -- Ramstein; and Bahrain. These teleport terminals provide an entry point (Northwest at Chesapeake, VA) into the US from the European Gateway. These upgrades include an X/Ka-Band capability, and associated baseband equipment. They will provide the BMDS necessary satellite communications connectivity to the European Gateway at Ramstein. This funding supports the BMDS essential minimum communications connectivity provisions for robust, redundant, secure, survivable communications path directly in the BMDS and GMD Fire Control (GFC). These teleports provide multiple diverse network routing paths to ensure no single points of failure.</p> <p>For FY 2009, this effort:</p> <p>Supported AN/TPY-2 Ballistic Missile Defense System (BMDS) Communications networks Provided engineering support for AN/TPY-2/BCSC-T MET SATCOM integration into the overall BMDS Started acquisition of rapidly deployable, re-configurable BMDS communications suites</p>					

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Upgraded EHF Teleports in Wahiawa, HI Continued development, production and fielding of the Protected Anti-Jam/Anti-Scintillation Wide band Net Centric System (PAAWNS) to support the SATCOM and OM-88 modems Supported exercises and testing relative to the AN/TPY-2 radar system with the BMDS Communications Networks (High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN) and transit case support systems) Deployed C2BMC capability to Israel and Ramstein (Spiral 6.2 capability) in cooperation with C2BMC Deployed and supported communications capabilities to Ramstein and Israel for the Crisis Analysis and Activation Team (CAAT) in cooperation with C2BMC</p> <p><i>FY 2010 Plans:</i> Acquisition of MET SATCOM X/Ka-band capability for teleport upgrades BMDS Communications Systems integration and certifications Support exercises and tests of the AN/TPY-2 radar system with the BMDS Communications Networks (HBCN and transit case support systems) Initiate communications teleports in the Middle East and Northwest VA</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Program Office Support Across All Blocks See Description Below		51.527	56.956	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>				
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> This effort provides Program Management support across all BMDS Radars Blocks where sensors work is performed. It provides for civilian salaries and travel. In addition, it provides other technical and business operations support services, technical oversight, and performance analysis provided by FFRDCs, UARCs, and Advisory & Assistance Services.</p> <p><i>FY 2010 Plans:</i> Continue to provide Program Management support across all Blocks</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>AN/TPY-2 #3 Radar Deployment, and Site Activation</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Continued site activation activities in Israel</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p>		18.700	0.000	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	128.838	91.893	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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

Products and services will be acquired with competitive means to the extent possible and practical.

AN/TPY-2 #7 radar manufacturing is being done on a Cost Plus Incentive Fee (CPIF) CLIN.

The HBCN and transit case BMDS Communications Networks (BCN) Program Plans address the design, development, acquisition, testing, integration, activation, and fielding. The overall executing agent is the Defense Information Systems Agency (DISA) via an existing Memorandum of Agreement (MOA) with MDA.

MDA will transition from legacy System Engineering and Technical Services contracts to an enterprise-wide Advisory & Assistance Services (A&AS) contract. The A&AS contract will be competitive. The objectives are to implement national engineering and support services for the BMDS mission across the agency; enhance the sharing of BMD expertise and knowledge; centralize the acquisition of support services manpower in a more efficient manner; and reduce overhead costs. In addition to engineering and technical services, A&AS includes studies, analysis 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

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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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			
AN/TPY-2 C2BMC Fielding AN/TPY-2 BMDs Deployable Comms Suites EX11	TBD/TBD	PM DCATS VA	14.801	1.958	Oct 2009	0.000		0.000		0.000	0	16.759	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 US Comms/Teleports EX11	TBD/TBD	NAVSEA VA	3.832	4.000	Oct 2009	0.000		0.000		0.000	0	7.832	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Teleport SATCOM EX11	TBD/TBD	DISA/PM DCATS/NAVSEA VA	0.480	16.100	Jul 2010	0.000		0.000		0.000	0	16.580	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 US Comms/PAAWNS EX11	TBD/TBD	DISA VA	2.611	4.110	Oct 2009	0.000		0.000		0.000	0	6.721	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Exercise Support (FTX-03) EX11	TBD/TBD	MDA VA	3.340	0.000		0.000		0.000		0.000	0	3.340	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Fielding-1 EX11	SS/CPAF	Lockheed Martin Team VA	4.350	0.000		0.000		0.000		0.000	0	4.350	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Fielding-2 EX11	TBD/TBD	DISA VA	22.807	0.000		0.000		0.000		0.000	0	22.807	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Fielding-3 EX11	TBD/TBD	DISA VA	6.390	8.769	Oct 2009	0.000		0.000		0.000	0	15.159	Continuing
	TBD/TBD	MDA	6.173	22.406	Jul 2010	0.000		0.000		0.000	0	28.579	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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			
Program Office Support Across All Blocks Civilian Salaries/Travel/ Other Support EX11		AL, MA, VA											
Program Office Support Across All Blocks Contractor Support Services EX11	C/CPFF	CSC, NG, BAE, Dynetics AL, VA	28.454	17.132	Jan 2010	0.000		0.000		0.000	0	45.586	Continuing
Program Office Support Across All Blocks Technical Oversight/ Performance Analysis EX11	TBD/TBD	MITRE, MIT-LL, JHU-APL VA, MA, MD	16.900	12.663	Apr 2010	0.000		0.000		0.000	0	29.563	Continuing
Program Office Support Across All Blocks Other Govt Agencies EX11	TBD/TBD	AMRDEC -	0.000	4.755	Apr 2010	0.000		0.000		0.000	0	4.755	Continuing
AN/TPY-2 #3 Radar Deployment, and Site Activation AN/TPY-2 #3 - Deployment, Site Activation EX11	SS/CPAF	Raytheon MA	17.980	0.000		0.000		0.000		0.000	0	17.980	Continuing
AN/TPY-2 #3 Radar Deployment, and Site Activation AN/TPY-2 #3 - EUCOM Operations Support EX11	TBD/TBD	USAEUR, 7A EUR	0.720	0.000		0.000		0.000		0.000	0	0.720	Continuing
Subtotal			128.838	91.893		0.000		0.000		0.000	0.000	220.731	

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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			

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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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	Award Date			
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
	128.838	91.893		0.000		0.000		0.000	0.000	220.731	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
AN/TPY-2 BMDS Deployable Comms Suites								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT EX11: <i>Ballistic Missile Defense Radars Block 5.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
AN/TPY-2 BMDS Deployable Comms Suites	4	2010	4	2010

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>				PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>			
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>WX11: Ballistic Missile Defense Radars Capability Development</i>	194.532	318.854	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	513.386
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

Sensors Capability Development includes completion of existing software builds for AN/TPY-2, and consolidation of common software functionality across X-Band radars. Existing software will be migrated to a common software build that will standardize functionality, and minimize software development and maintenance costs.

Additional Capability Development efforts include Test & Evaluation, BMDS Architecture engineering, Common Threat engineering, External Sensors Lab (ESL), and Airborne Infrared Surveillance (AIRS) efforts. The T&E effort covers Sensors BMDS-level testing including flight tests, ground tests, and Concurrent Training, Testing and Operations (CTTO). The CTTO capability will allow warfighter and MDA to safely conduct concurrent training, test and operations with BMDS sensors.

BMDS Architecture Engineering efforts address two areas: Infrared (IR) Sensor Integration and Advanced Sensor Development and Prototypes.

The objective of Infrared (IR) Sensor Integration is to provide a pervasive cueing and early track capability with IR sensors, with a focus on regional defense scenarios. This initiative will accelerate existing efforts to create an operational interface with Overhead Persistent Infrared (OPIR) sensors external to the BMDS as a near-term contingency capability. This will enable interceptor launch on an OPIR track, a capability critical to extending interceptor reach against regional threats, and to controlling the growth of interceptor inventory as regional threats multiply. This effort will also explore the feasibility of fielding unmanned aerial vehicles to augment regional IR sensor coverage.

The objective of Advanced Sensor Development and Prototypes is to develop scalable prototypes of advanced options for threat negation; to assess the potential capability in terms of interceptor inventory savings; and, to evaluate the technical and programmatic feasibility toward an increased threat-negation capability.

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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Common Threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense (BMD) System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis activities. It is also used to develop the BMD System Description Document and BMD System Specification.

The External Sensors Lab (ESL) provides a research and development test bed to find and assess data sources external to the Agency. As these new sources are brought into the lab, the overall performance of existing capabilities are improved and new capabilities for the BMDS are discovered. Algorithms developed by ESL will contribute to precision radar cueing, system track, and hit/kill assessment. Precision radar cueing by ESL has been successfully demonstrated several times during flight testing. ESL provides engineering-level code to the C2BMC program for maturing the algorithms into robust, operationally suitable code.

The Airborne Infrared Surveillance (AIRS) program is a proof of concept program to demonstrate and evaluate the potential benefits of airborne infrared sensor systems to the Ballistic Missile Defense System (BMDS). The AIRS program was funded by a Congressional Add in FY 2009.

Capability Development also includes quality, safety, and mission assurance operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability. Funding will also provide quality and safety infrastructure support for Agency operations.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
X-Band Basic Program See Description Below <i>FY 2009 Accomplishments:</i> This effort includes: systems engineering, risk management, configuration control, design reviews, and integrated product teams supporting software algorithms for discrimination, development of common X-Band software, development of mission profiles to support TPY-2 operations worldwide, enhancement of radar availability at operating locations, and development of critical engagement conditions (CECs) and empirical measurement events (EMEs). CEC/EMEs are the conditions and	98.187	132.728	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 0603884C: <i>Ballistic Missile Defense Sensors</i>		PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>													
B. Accomplishments/Planned Program (\$ in Millions)																	
<table border="1"> <thead> <tr> <th></th> <th>FY 2009</th> <th>FY 2010</th> <th>FY 2011 Base</th> <th>FY 2011 OCO</th> <th>FY 2011 Total</th> </tr> </thead> <tbody> <tr> <td> <p>events ;where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p>Completed software Capability Release (CR-2.4) TPY-2 integration and testing at Vandenberg Air Force Base (VAFB)</p> <p>Completed electromagnetic interference (EMI) testing at VAFB and White Sands Missile Range</p> <p>Completed mission profile deliveries to support TPY-2 #3 operations in Israel</p> <p>Delivered baseline discrimination capability for TPY-2 #3</p> <p>Delivered CR-1.3.7 for TPY-2 #2 at Shariki, Japan</p> <p>Began development of the common software build (CX-1)</p> <p>The CX-1 Common Software Build consolidates the AN/TPY-2 forward-based mode capabilities release 2.4 and the AN/TPY-2 terminal mode release 4.2.4, increasing the flexibility and interchangeability of those two radars. CX-1 also includes improved baseline terminal mode and forward-based mode discrimination, sensor registration enhancements, interference monitoring, and acquisition sensor tasking. These capabilities will improve ``search/track/discriminate`` performance, expand the range window, and augment threat handling.</p> <p>Began CX-2 requirements development</p> <p>The CX-2 Common Software Build consolidates CX-1 functionality with XBR Build 3.0, providing common software for AN/TPY-2 and XBR radars. CX-2 will thus support terminal, forward-based, and midcourse missions. CX-2 also adds a Common X-Band Interface, updates sensor registration bias and covariance, enhances integrated discrimination processing, expands waveform repertoire, and provides environmental sensing and dynamic resource management. These enhancements and commonality improvements support BMDS Integrated Build C and will increase BMDS threat handling and cued search capabilities, and provide integrated discrimination for AN/TPY-2 and XBR radars.</p> </td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	<p>events ;where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p>Completed software Capability Release (CR-2.4) TPY-2 integration and testing at Vandenberg Air Force Base (VAFB)</p> <p>Completed electromagnetic interference (EMI) testing at VAFB and White Sands Missile Range</p> <p>Completed mission profile deliveries to support TPY-2 #3 operations in Israel</p> <p>Delivered baseline discrimination capability for TPY-2 #3</p> <p>Delivered CR-1.3.7 for TPY-2 #2 at Shariki, Japan</p> <p>Began development of the common software build (CX-1)</p> <p>The CX-1 Common Software Build consolidates the AN/TPY-2 forward-based mode capabilities release 2.4 and the AN/TPY-2 terminal mode release 4.2.4, increasing the flexibility and interchangeability of those two radars. CX-1 also includes improved baseline terminal mode and forward-based mode discrimination, sensor registration enhancements, interference monitoring, and acquisition sensor tasking. These capabilities will improve ``search/track/discriminate`` performance, expand the range window, and augment threat handling.</p> <p>Began CX-2 requirements development</p> <p>The CX-2 Common Software Build consolidates CX-1 functionality with XBR Build 3.0, providing common software for AN/TPY-2 and XBR radars. CX-2 will thus support terminal, forward-based, and midcourse missions. CX-2 also adds a Common X-Band Interface, updates sensor registration bias and covariance, enhances integrated discrimination processing, expands waveform repertoire, and provides environmental sensing and dynamic resource management. These enhancements and commonality improvements support BMDS Integrated Build C and will increase BMDS threat handling and cued search capabilities, and provide integrated discrimination for AN/TPY-2 and XBR radars.</p>					
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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Initiated TPY-2 availability enhancements at worldwide operating locations Provided systems engineering ``reach-back`` for consolidated contractor logistics support contract Supported critical engagement conditions (CECs) and empirical measurement events (EMEs)** development and traceability to Integrated Master Test Plan (IMTP)</p> <p>** CEC/EMEs are the conditions and events ;where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p><i>FY 2010 Plans:</i> Conduct Common Software Build CX-1 design reviews Deliver the first common software build for integrated ground testing (CX-1) Complete AN/TPY-2 CX-1 formal qualification testing (FQT) Integrate and test CX-1 on TPY-2 radar Support mission profile enhancement to support TPY-2 #3 operations in Israel Support baseline discrimination enhancements for TPY-2 #3 operations in Israel Continue TPY-2 availability enhancements at worldwide operating locations Provide systems engineering ``reach-back`` for consolidated contractor logistics support contract Initiate Common Software Build CX-2 development efforts Initiate CX-3 requirements development</p> <p>These efforts will deliver the following new BMDS Build C capabilities: Integration of Hercules Suite 1 Algorithms (AN/TPY-2 (FBM) Build 2.4) C2BMC Sensor Resource Management and Tasking (AN/TPY-2 (FBM) Build 2.4) C2BMC Multi-Radar Capability (AN/TPY-2 (FBM) Build 2.4) GMD Utilization of Improved Discriminated Track (AN/TPY-2 (FBM) Build 2.4) Increased BMDS Effectiveness and Common Threat (AN/TPY-2 (FBM) Build 2.4)</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 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Radars Test & Evaluation</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The test program covers the full spectrum of sensors testing. For the TPY-2 radar, test activities begin with subcomponents and continue through BMDs system level ground and flight testing of delivered radars. For Upgraded Early Warning Radars (UEWRs) and COBRA DANE, test activities are focused on verification and demonstration of the missile defense functionality. This effort provides for pre and post-flight test analysis, the geographic re-positioning of TPY-2 radars, and development of mission profiles to include search fences for testing and test support positioning for the Sea-Based X-Band Radar (SBX). There is high interdependency within the BMDs for both ground and flight test activities; C2BMC is required to task TPY-2 radars, and pass TPY-2 radar information to Aegis and the Ground-Based Midcourse Defense element. The program also leverages numerous Targets of Opportunity (TOOs) to provide relevant and cost-effective flight test opportunities.</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Sensors Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Sensors participation in the consolidated MDA-wide System Test Program and the resources for the planning, design, execution, and management of Sensors in BMD System testing in accordance with the BMDs Test Policy, MDA Directive 3202.03 (Jan 09). This applies to all Flight, Integrated Ground,</p>		53.864	115.445	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>and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Sensors will support the BMDS Hardware-In-The-Loop (HWIL) Modeling and Simulation Program by providing and integrating into the BMDS system-level HWIL single stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs.</p> <p>Sensors will support System Pre Flight predictions for each system level flight test using the test framework set up with the BMDS configuration for a particular flight test. This provides confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to proof out the construct of the flight test to ensure if the required data and data management plan will support System Post Flight Reconstruction (SPFR) objectives. SPFR will use a HWIL and/or a Digital M&S Environment to replicate the day of flight for the BMDS configuration, modified to represent the actual environment conditions and target dynamics observed in flight. SPFR focuses on critical engagement conditions (CECs) and empirical measurement events (EMEs) anchored to real world events. CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations. These CECs and EMEs permit verification and validation of Sensors modeling and simulation, increasing confidence in the models to inform Combatant Command (COCOM) assessment and deployment decisions.</p> <p>For FY 2009, the Sensors test and evaluation program:</p> <p>Planned and executed radar testing, including test site support, during Targets of Opportunity (TOO) and BMDS flight tests Planned and conducted TOO flight tests with the External Sensors Lab (ESL) Planned, prepared scenarios, and conducted ground tests with the AN/TPY-2 Hardware-In-The-Loop (HWIL)</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>Provided Test Site Support at VAFB Completed development, and tested the Missile Defense System Exerciser (MDSE) node for AN/TPY-2 HWIL Continued CTTO development and demonstration planning and execution in conjunction with MDSE ground test integration efforts Conducted BMDS ground testing with Thule Upgraded Early Warning Radar (UEWR) Continued Distributed Test SIM (DESIM) maturation of AN/TPY-2 and Thule UEWR for BMDS war games, and C2BMC cycle testing</p> <p>The FY 2009 test program executed 14 critical engagement condition/empirical measurement event (CEC/EME)** required data collections to reach cumulative 34% completion (64 of 190 total) of data collection necessary for validation, verification, and assessment (VV&A) of modeling and simulation.</p> <p>** CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p><i>FY 2010 Plans:</i> Support AN/TPY-2 software capability release (CR-2.4) testing and critical engagement condition (CEC) for advanced discrimination techniques Support 2-Stage Booster Interceptor Flight Test BVT-01 from VAFB utilizing TPY-2 Forward Based (FB) Support USAF Target of Opportunity Glory Trip 200 utilizing SBX and TPY-2 FB Support THAAD Intercept Flight Tests (FTT-11, FTT-12) Support COBRA DANE flight testing and CECs for scan angles, and monopulse tracking (FTX-10) Support other flight tests as targets of opportunity Participate in Regional Focused Hardware In The Loop (HWIL) Tests GTX-04a and Full BMDS HWIL Tests GTX-04b and GTX-04c</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>Plan, develop, integrate and test a common HWIL stimulation framework with the Elements for the GTX, GTI, GTD ground tests, and Concurrent Test, Training, and Operations (CTTO) demos Provide Test Site Support at VAFB for AN/TPY-2 testing Continue CTTO development for TPY-2 and UEWRs Complete Thule UEWR BMDS integration testing</p> <p>The FY 2010 test program will execute 13 critical engagement condition/empirical measurement event (CEC/EME)** required data collections to reach a cumulative 41% completion (77 of 190 total) of data collections necessary for verification, validation, and assessment of models and simulations.</p> <p>**CEC/EMEs are the conditions where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Sensors System Engineering & UMDF See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Modeling and simulation (M&S) activities support all phases of Sensors development, including development of modifications to the X-Band, UEWR, and Cobra Dane digital representations, flight test missions, ground tests, war games, exercises, and performance assessment. Models and simulations are tailored to the specific need of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definition studies, to high-fidelity</p>		17.302	38.821	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>models used to support engineering development, or testing and are integrated into the BMD Digital Simulations Architecture. Digital simulations support Performance Assessment (PA) events, which provide critical system level performance data relative to all elements, the system engineer, M&S developers, OTA and Warfighter. Further, the M&S Digital tools are accredited for each application and for specific objectives; tools are put through a rigorous verification and validation process, reviewing coding and specifications, and comparing analyses against actual flight test results. Planning support is required to assist in the validation and verification (V&V) plan development, test execution, analysis for V&V reports and program office M&S certification. The Digital End-to-End simulation of the BMDS requires a PA Integrated V&V Plan and Report (at both element and system level), and a PA-system level Accreditation Plan and Report.</p> <p>MDA has a set of Unifying Missile Defense Functions (UMDFs), which increase the effectiveness of the BMD System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These UMDF efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). UMDFs are implemented across the BMDS elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats. For FY 2009, the Sensors Program:</p> <p>Completed AN/TPY-2 digital simulation representation (Capability Release Upgrade High Fidelity Model (CRUSHM), 2.4) that incorporates advanced discrimination techniques (2nd Qtr FY 2009)</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>Completed development of high-performance RF scene generator for flight and ground testing of AN/TPY-2 advance discrimination algorithms in FY09 (3rd QTR FY 2009)</p> <p>Completed demonstration of the integration of AN/TPY-2 RF scene generator into the BMDS Hardware-In-The-Loop (HWIL) single stimulation framework. (1st QTR FY 2009)</p> <p>Completed integration of the AN/TPY-2 digital simulation (CRUSHM, 1.3) into the BMD Digital Simulations Architecture (DSA) for support of Performance Assessment PA-09. (PA09 1st QTR FY 2010)</p> <p>Completed development of critical engagement conditions (CEC) and empirical measurement events (EME)** criteria that address the most significant model uncertainties of the sensor models. (3rd QTR FY 2009)</p> <p>Completed an integrated V&V plan and report for the AN/TPY-2 simulation (CRUSHM, 1.3) as integrated into the BMD Digital Simulations Architecture for PA-09. (3rd QTR FY 2009)</p> <p>Completed post-flight reconstructions (PFR) of BMDS flight tests (FTX-02, FTX-03 and FTG-05) and tracking of calibration satellites to provide detailed empirical evidence of the model suitability to represent the sensor. (4th QTR FY 2009)</p> <p>**CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p>Unifying Missile Defense Functions (UMDF) (in support of BMDS Integrated Build C)</p> <p>Completed BMDS System Engineering requirement traceability to Unifying Missile Defense Functions (UMDF) (2nd QTR FY 2009)</p> <p>Completed initial UMDF integrated delivery plan for FY 2010 (3rd QTR FY 2009)</p> <p>Completed initial discrimination database development to support Aegis Launch on AN/TPY-2 (3rd QTR FY 2009)</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>Demonstrated capability during BMDS ground and flight testing (Full BMDS Distributed Test GTX-03C, Aegis Intercept Flight Test FTM-15)</p> <p>Delivered discrimination database for Aegis Launch on AN/TPY-2</p> <p>Completed discrimination database for AN/TPY-2 software capability release CR-2.4 to support FY 2010 ground and flight testing of near-term discrimination (4th QTR FY 2009)</p> <p><i>FY 2010 Plans:</i></p> <p>Modeling and Simulation (in support of BMDS Integrated Build C)</p> <p>Initiate enhancements of sensor models as required through application of CEC/EME** results from flight and ground tests, and satellite tracking campaign (1st QTR FY 2010)</p> <p>Complete initial digital simulation of first generation common software (CX1) for the X-band sensors (4th QTR FY 2010)</p> <p>Initiate development of Unifying Missile Defense Functions (UMDF) modeling (4th QTR FY10)</p> <p>Implement Sensor registration to include bias and covariance consistency</p> <p>Common messaging and discrimination feature reporting</p> <p>Post-intercept debris and electronic counter-countermeasures (ECCM)</p> <p>Complete integration of the next generation AN/TPY-2 digital simulation (CRUSHM, 2.4) into the BMD Digital Simulations Architecture for support of PA-10 (3rd QTR FY 2010)</p> <p>Complete integration of the RF scene generator for the AN/TPY-2 (CR2.4) into the BMDS Hardware in the Loop (HWIL) single stimulation framework in support of GTI-04 (full BMDS HWIL test) (2nd QTR FY 2010)</p> <p>Complete integrated validation and verification (V&V) plan and report for the AN/TPY-2 simulation (CRUSHM, 2.4) (2nd QTR FY 2010)</p> <p>Complete VV&A plan for the RF scene generator (RDSIS) supporting AN/TPY-2 CR2.4 (3rd QTR FY 2010)</p> <p>Complete PFR of GMD Intercept Flight Test FTG-06 to anchor models (4th QTR FY 2010)</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>Complete analysis of calibration satellite tracking events to anchor models. (4th QTR FY 2010)</p> <p>**CEC/EMEs are the conditions and events ;where data is obtained from flight and ground tests in order to anchor models and simulations.</p> <p>Unifying Missile Defense Functions (UMDF) (in support of BMDS Integrated Build C and Build D)</p> <p>Initiate development of mission profiles to enable coordinated tasking/control of multiple AN/TPY-2 radars (1st QTR FY 2010)</p> <p>Initiate algorithm development to facilitate sensor registration capabilities (2nd QTR FY 2010)</p> <p>Initiate development of X-band ``sidecar`` to facilitate the development of integrated BMDS capabilities (2nd QTR FY 2010)</p> <p>Complete initial engineering trade studies for sensor registration, discrimination, system track, battle management and hit/kill assessment (4th QTR FY 2010)</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>External Sensors</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The External Sensors Lab (ESL) provides a test bed to utilize sensor data to enhance the efficiency and effectiveness of the overall BMDS. Algorithms developed by ESL will contribute to precision radar</p>		10.606	18.602	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>cueing, system track, and hit/kill assessment. Precision radar cueing by ESL has been successfully demonstrated several times during flight testing. ESL provides engineering-level code to the C2BMC program for maturing the algorithms into robust, operationally suitable code.</p> <p>Continued testing and demonstration of External Sensor capabilities Continued External Sensor operations at the Missile Defense Integrated Operations Center (MDIOC) lab Developed software code for operational site Initiated acquisition of hardware equipment and software for operational site Conducted sophisticated sensor/algorithm/CONOPs experiment Initiated acquisition for hardware upgrade for the MDIOC Lab</p> <p><i>FY 2010 Plans:</i> Continue to develop and deliver algorithm enhancements to utilize sensor data to enhance BMDS efficiency and effectiveness Continue development of software code for operational site</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans are found in Project MD11</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Architecture See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p>		0.000	10.718	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 2010 Plans:</i></p> <p>The objective of InfraRed (IR) Sensor Integration is to provide a pervasive cueing and early track capability with IR sensors to facilitate Early Intercept capabilities, with a focus on regional defense scenarios. Early Intercept would allow 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. By leveraging Unmanned Aerial Vehicles (UAVs) and space assets for pervasive over-the-horizon sensor netting, the engagement zone of current Standard Missile-3 interceptors can be extended to the pre-apogee portion of a missile's trajectory.</p> <p>Early Intercept can provide an extended engagement layer that avoids wasteful salvos by shooting an interceptor, assessing the attempted intercept, and shooting again if unsuccessful.</p> <p>The mobility/transportability of early intercept capability, the flexibility of UAV and space-based sensor support, and lower Operation and Sustainment (O&S) costs make early intercepts more appealing than midcourse systems. Forward-basing AN/TPY-2 radars comes with diplomatic challenges and significant O&S costs, making the use of current Overhead Persistent Infrared (OPIR) and less expensive operations of UAVs an appealing near-term option. We will undertake several demonstrations to more sharply define the requirements for sensor netting, fire control, and integration to accomplish Early Intercept.</p> <p>This initiative will accelerate existing efforts to create an operational interface with high fidelity Overhead Persistent Infrared (OPIR) sensors external to the BMDS as a near-term contingency capability. This will enable interceptor launch on an OPIR track, a capability critical to extending interceptor reach against regional threats, and to controlling the growth of interceptor inventory as regional threats multiply. This effort would also explore the feasibility of using an existing airborne platform and sensors with slight modifications to augment regional IR sensor coverage.</p>					

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The objective of advanced sensor development and prototypes is to develop scalable prototypes of advanced options for threat negation; to assess the potential capability in terms of interceptor inventory savings; and, to evaluate the technical and programmatic feasibility toward an increased threat-negation capability.</p> <p>Determine and characterize OPIR interface requirements Execute initial development of regionally-tailored OPIR processing and connectivity; assess for performance via simulation Execute planning and coordination for real-time track demonstrations using a UAV (associated with scheduled BMDS test events) using an existing airborne platform Execute advanced sensor small-scale laboratory testing; initiate mid-scale prototype design; initiate design of mission-representative support hardware Develop UAV and space-based sensor tracking algorithms</p> <p><i>FY 2011 Base Plans:</i> FY 2011 BMDS Architecture Plans were moved to the Advanced Technology PE (0603175C, Project MD25)</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Common Threat See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Threat Systems Engineering supports the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process.</p>		0.000	2.540	0.000	0.000	0.000

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The Threat Systems Engineering uses intelligence community data to define the BMDS threat space and directly supports the development of the BMD System Description Document and System and Element Specifications. This threat space is documented in the Adversary Data Packages (ADP), which includes common and consistent representation of Missile Systems and countermeasures to drive BMDS requirements, designs, and directly supports the execution of Integrated Master Test Plan (IMTP) (i.e. flight test targets, ground tests & digital simulations, and pre-mission analysis). Threat Systems Engineering also develops scenarios (trajectory and signature) for system and element utilization for compliance and assessment evaluations of BMDS capability to defend homeland, deployed forces, and friends and allies. For FY 2009, MDA:</p> <p>Developed an agency-wide Common Threat baseline in support of BMDS design, verification, and assessment</p> <p>Completed the BMDS Integrated Build D ADP update to document adversary missile capabilities and characterizations consistent with projected threat environment for the BMDS</p> <p>Produced all the threat definition and scenario data required to support the BMDS Integrated Master Test Plan, including several Flight Tests, BMDS Ground Test 03 (GT-03), BMDS Performance Assessment 09 (PA-09), FY09 wargames and exercises (Fast Shield II, JDIE-08), and the implementation of Improved BMDS discrimination</p> <p>Produced scenario data to support Element and Component design and assessment for BMDS Integrated Build D, Aegis BMD 5.1, and Far Term Sea-based Terminal</p> <p>Developed threat data for special projects</p> <p>Validated that BMDS test targets are threat representative (FTM-15, FTG-06, FTT-10a)</p> <p><i>FY 2010 Plans:</i></p> <p>Maintain and update the agency-wide Common and consistent BMDS threat descriptions</p> <p>Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for BMDS Integrated Builds</p>						

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Produce all the threat definition and scenario data required to support the BMDS Integrated Master Test Plan, including several Flight Tests, Ground Tests (GTX-04b, GTX-04c), BMDS Performance Assessment 2009 (PA-09) and Technical Assessment 2010 (TA-10), and FY 2010 wargames and exercises</p> <p>Produce scenario data to support Element and Component analysis of alternatives, requirements development, design and assessment for BMDS Integrated Build D updates and all phases of Phased Adaptive Approach (PAA) including: THAAD, Precision Tracking Space System (PTSS), Air-Borne Infra-Red (ABIR), Aegis BMD Ashore, Aegis BMD 5.1, Far Term Sea-based Terminal, Early Intercept, TPY-2, C2BMC, and Space Tracking and Surveillance System (STSS)</p> <p>Develop threat data for special projects</p> <p>Validate BMDS test targets are threat representative (JFTM-03, FTG-06, FTT-11, FTT-12)</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Common Threat Plans were moved to the Enabling PE (0603890C, Project MD24)</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Operations and Maintenance of Core IT Services</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Project funds ;supported dedicated information technology services for mission specific research and test efforts to include classified and unclassified networks, software licenses, sustainment and information assurance certification.</p> <p><i>FY 2010 Plans:</i> NA</p>		9.773	0.000	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Mobile Sensors Enhancement</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Mobile Sensors enhancement is funded by a Congressional add in FY09. MDA's BMDS architecture intends to close existing sensor coverage gaps by deploying a global sensor network. Today, the AN/TPY-2 forward based X-Band radar and sea based X-Band radar (SBX) are selectively deployed in the Pacific region and planned for Europe. A subset of AEGIS ships, modified for ballistic missile defense (BMD), provide long-range search and track for theater ballistic missile defense. A mobile maritime sensor (MMS), leveraging radar technology from the COBRA JUDY Replacement program, will enhance BMDS capability, increasing threat coverage and availability to the BMDS global sensor network and providing continuous X-band radar coverage throughout the threat's trajectory. The MMS could also provide a dual-use, multi-mission capability to perform BMD concurrently with support to the intelligence community by performing technical treaty verification. The MMS produces significant cost savings to future Navy platforms, with networked MMSs providing a path to optimize future Navy ship radars for fleet and theater BMD and Anti-Air Warfare.</p> <p>FY 2009 tasks refined MMS performance predictions to optimize platform deployment</p> <p><i>FY 2010 Plans:</i> NA</p>		4.000	0.000	0.000	0.000	0.000

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>EO/IR Sensors</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Airborne Infrared Surveillance (AIRS) program is a proof of concept program to demonstrate and evaluate the potential benefits of airborne infrared sensor systems to the Ballistic Missile Defense System (BMDS). This program evaluates the AIRS ability to operate as the primary sensor in an engagement (i.e. use AIRS data to engage ballistic missile threats.) The AIRS program was funded by a Congressional Add in FY 2008 and FY 2009.</p> <p>Continued to demonstrate AIRS capabilities during flight tests</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>		0.800	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals		194.532	318.854	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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>
• 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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

Products and services will be acquired with competitive means to the extent possible and practical.

Test & Evaluation projects use multiple existing development contracts depending on the system(s) involved in the testing.

The BMDS radar (AN/TPY-2) project used an existing radar design to minimize development costs and schedule. Design enhancements focus on software changes for the forward based algorithms and C2BMC connectivity. The Common Software work will begin on the existing AN/TPY-2 development contract.

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			
X-Band Basic Program X-Band Software, String, Development WX11	SS/CPAF	Raytheon MA	98.187	132.728	Jul 2010	0.000		0.000		0.000	0	230.915	Continuing
Sensors System Engineering & UMDF Advanced Sensor Tech Demo WX11	TBD/TBD	TBD -	0.000	4.468	Oct 2009	0.000		0.000		0.000	0	4.468	Continuing
Sensors System Engineering & UMDF BMDS Sensor Integration WX11	Various/ Various	APL, MIT, Raytheon MD, MA, VA, AL	0.000	18.874	Oct 2009	0.000		0.000		0.000	0	18.874	Continuing
Sensors System Engineering & UMDF BMD Sensor M&S WX11	Various/ Various	Raytheon, APL, NGC, NTB MA, MD, VA, AL	0.000	10.553	Oct 2009	0.000		0.000		0.000	0	10.553	Continuing
Sensors System Engineering & UMDF BMDS Sensors V&V WX11	TBD/TBD	TBD -	0.000	3.298	Oct 2009	0.000		0.000		0.000	0	3.298	Continuing
Sensors System Engineering & UMDF Advanced Sensor Technology WX11	Various/ Various	DARPA, APL, MIT VA, MD, MA, AL	0.000	1.628	Oct 2009	0.000		0.000		0.000	0	1.628	Continuing
Sensors System Engineering & UMDF RDSIS WX11	SS/CPAF	Lockheed Martin AL	1.700	0.000		0.000		0.000		0.000	0	1.700	Continuing
Sensors System Engineering & UMDF	SS/CPAF	Boeing AL	0.947	0.000		0.000		0.000		0.000	0	0.947	Continuing

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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			
XBR Boost State Using WX11													
Sensors System Engineering & UMDF UMDF Integration with ES WX11	Various/ Various	SIDC-XIR, SCITEC, SAF- FMBIB CO, VA	1.651	0.000		0.000		0.000		0.000	0	1.651	Continuing
Sensors System Engineering & UMDF UMDF (Correlation & Sys Track) WX11	SS/CPAF	Raytheon MA	3.511	0.000		0.000		0.000		0.000	0	3.511	Continuing
Sensors System Engineering & UMDF UMDF Sidecar Demo WX11	TBD/TBD	MIT-LL MA	0.760	0.000		0.000		0.000		0.000	0	0.760	Continuing
Sensors System Engineering & UMDF UMDF (Sensor Registration, Trade Study) WX11	TBD/TBD	JHU-APL MD	0.390	0.000		0.000		0.000		0.000	0	0.390	Continuing
Sensors System Engineering & UMDF Sensors Engineering WX11	TBD/TBD	DXSS AL	8.343	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
External Sensors Prime Contractor WX11	SS/CPAF	Northrop Grumman (RaPID) CO	3.914	4.778	Oct 2009	0.000		0.000		0.000	0	8.692	Continuing

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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			
External Sensors Systems Engineering/ Aerospace Analysis WX11	TBD/TBD	MITRE/AERO Space VA	0.365	0.372	Oct 2009	0.000		0.000		0.000	0	0.737	Continuing
External Sensors Live Test Support/Algorithm Development & Analysis WX11	TBD/TBD	NASIC (WPAFB) OH	0.500	0.798	Jan 2010	0.000		0.000		0.000	0	1.298	Continuing
External Sensors Analysis, Test Support, Aegis Support WX11	TBD/TBD	NSWC-DD VA	0.906	0.798	Jan 2010	0.000		0.000		0.000	0	1.704	Continuing
External Sensors Lab Development, Integration, and Accreditation WX11	TBD/TBD	Various VA	0.521	0.532		0.000		0.000		0.000	0	1.053	Continuing
External Sensors Accreditation WX11	TBD/TBD	MDIOC (JRDC-NG) CO	0.813	1.064	Oct 2009	0.000		0.000		0.000	0	1.877	Continuing
External Sensors Operations Migration WX11	SS/CPAF	Northrop Grumman CO	3.352	10.260	Apr 2010	0.000		0.000		0.000	0	13.612	Continuing
External Sensors Algorithm Development and Ops WX11	TBD/TBD	FMBMB CO	0.235	0.000		0.000		0.000		0.000	0	0.235	Continuing
BMDS Architecture Overhead Persistent	TBD/TBD	FFRDC -	0.000	10.718	Oct 2009	0.000		0.000		0.000	0	10.718	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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			
Infrared (OPIR) Interface Development WX11													
Common Threat Contractor Support Services (CSS) WX11	C/CPFF	Cobham VA	0.000	0.468	Apr 2010	0.000		0.000		0.000	0	0.468	Continuing
Common Threat SMDC Support WX11	TBD/TBD	SAIC VA	0.000	2.072	Apr 2010	0.000		0.000		0.000	0	2.072	Continuing
Mobile Sensors Enhancement Mobile Sensors Prime Contractor WX11	SS/CPAF	LS/Aeromet OK	4.000	0.000		0.000		0.000		0.000	0	4.000	Continuing
EO/IR Sensors AIRS Prime Contractor WX11	SS/CPFF	LS/Aeromet OK	0.780	0.000		0.000		0.000		0.000	0	0.780	Continuing
EO/IR Sensors SIMS CARD for AIRS WX11	TBD/TBD	DISA-Scott AFB IL	0.020	0.000		0.000		0.000		0.000	0	0.020	Continuing
Subtotal			130.895	203.409		0.000		0.000		0.000			

Remarks

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

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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			
Operations and Maintenance of Core IT Services O&M of Core IT Services WX11	TBD/TBD	TBD -	9.773	0.000		0.000		0.000		0.000	0	9.773	Continuing
Subtotal			9.773	0.000		0.000		0.000		0.000	0.000	9.773	

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			
BMDS Radars Test & Evaluation AN/TPY-2 Ft/Grnd Test Support WX11	SS/CPAF	Raytheon, MDA MA, VA	48.517	0.000		0.000		0.000		0.000	0	48.517	Continuing
BMDS Radars Test & Evaluation AN/TPY-2 VAFB & PMRF WX11	TBD/TBD	VAFB, PMRF CA, HI	0.128	0.000		0.000		0.000		0.000	0	0.128	Continuing
BMDS Radars Test & Evaluation Operational Test Agency Support WX11	TBD/TBD	OTA Various	0.000	2.800	Oct 2009	0.000		0.000		0.000	0	2.800	Continuing

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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			
BMDS Radars Test & Evaluation Government Testing Oversight/ Accreditation WX11	TBD/TBD	NSWC-PHD, NSWC-DD CA, VA	1.055	0.000		0.000		0.000		0.000	0	1.055	Continuing
BMDS Radars Test & Evaluation Forward Based Flight/Ground Test Support WX11	SS/CPAF	Raytheon MA, VA	0.000	27.478	Jul 2010	0.000		0.000		0.000	0	27.478	Continuing
BMDS Radars Test & Evaluation Inter Sensor Testing WX11	TBD/TBD	TBD	0.000	3.221	Jul 2010	0.000		0.000		0.000	0	3.221	Continuing
BMDS Radars Test & Evaluation Warfighter Exercises WX11	SS/CPAF	Raytheon MA	0.000	1.596	Jul 2010	0.000		0.000		0.000	0	1.596	Continuing
BMDS Radars Test & Evaluation Digital Signal Injection WX11	SS/CPAF	Raytheon MA	0.000	15.626	Jul 2010	0.000		0.000		0.000	0	15.626	Continuing
BMDS Radars Test & Evaluation Thule Testing WX11	SS/CPAF	Raytheon MA	0.000	3.700	Oct 2009	0.000		0.000		0.000	0	3.700	Continuing
BMDS Radars Test & Evaluation Thule CTTO Infrastructure WX11	SS/CPAF	Raytheon MA	0.000	10.638	Oct 2009	0.000		0.000		0.000	0	10.638	Continuing
BMDS Radars Test & Evaluation UEWR CTTO Infrastructure WX11	TBD/TBD	TBD	0.000	12.766	Oct 2009	0.000		0.000		0.000	0	12.766	Continuing
	TBD/TBD	TBD	0.000	5.851	Oct 2009	0.000		0.000		0.000	0	5.851	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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			
BMDS Radars Test & Evaluation COBRA DANE CTTO Infrastructure WX11		TBD											
BMDS Radars Test & Evaluation COBRA DANE Flight/Ground Test Support WX11	TBD/ Various	OGA/Raytheon MA	0.000	2.861	Oct 2009	0.000		0.000		0.000	0	2.861	Continuing
BMDS Radars Test & Evaluation SBX CTTO Infrastructure WX11	SS/CPAF	Raytheon MA	0.000	6.276	Oct 2009	0.000		0.000		0.000	0	6.276	Continuing
BMDS Radars Test & Evaluation SBX Flight/ Ground Test Support WX11	SS/CPAF	Raytheon MA	0.000	17.313	Oct 2009	0.000		0.000		0.000	0	17.313	Continuing
BMDS Radars Test & Evaluation SBX MDSE Infrastructure WX11	SS/CPAF	Raytheon MA	0.000	5.319	Oct 2009	0.000		0.000		0.000	0	5.319	Continuing
BMDS Radars Test & Evaluation ESL Testing WX11	SS/CPAF	NG (RaPID), SIDC/XIR (NG Azusa CO	2.042	0.000		0.000		0.000		0.000	0	2.042	Continuing
BMDS Radars Test & Evaluation GT Support WX11	TBD/TBD	JHU-APL MD	0.800	0.000		0.000		0.000		0.000	0	0.800	Continuing
	SS/CPAF	COLSA Inc. MA	0.060	0.000		0.000		0.000		0.000	0	0.060	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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			
BMDS Radars Test & Evaluation CTTO Support WX11													
BMDS Radars Test & Evaluation CCC Satellite Test Campaign WX11	SS/CPAF	Boeing AL	0.490	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Radars Test & Evaluation FTG-06 Mission Support OPE WX11	SS/CPAF	LM AL	0.772	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			53.864	115.445		0.000		0.000		0.000			

Remarks

NA

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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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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
Project Cost Totals	194.532	318.854	0.000	0.000	0.000			

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Complete TPY-2 Digital Simulation CRUSHM 2.4		■																														
Complete RF Scene Generator for TPY-2 Advanced Discrimination			■																													
Complete V&V of TPY-2 Simulation in Performance Assessment FY 2009 (PA-09)				■																												
Complete AN/TPY-2 CX-1 Formal Qualification Test (FQT)						■	■	■																								
Complete Initial Dev of CECs/EMEs								■																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT WX11: <i>Ballistic Missile Defense Radars Capability Development</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Complete TPY-2 Digital Simulation CRUSHM 2.4	2	2009	2	2009
Complete RF Scene Generator for TPY-2 Advanced Discrimination	3	2009	3	2009
Complete V&V of TPY-2 Simulation in Performance Assessment FY 2009 (PA-09)	4	2009	4	2009
Complete AN/TPY-2 CX-1 Formal Qualification Test (FQT)	2	2010	4	2010
Complete Initial Dev of CECs/EMEs	4	2010	4	2010

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</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
XX11: <i>Ballistic Missile Defense Radars Sustainment</i>	129.649	159.611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	289.260
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

This effort provides for the operation and support of BMDS Radars until transferred to a Service component. Sustainment also includes MDA support for maintenance of radar missile defense software after transition. This includes:

- AN/TPY-2s
- Thule Upgraded Early Warning Radar (UEWR)
- COBRA DANE radar
- Beale and Fylingdales UEWRs

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
BMDS Radars (Sustainment) See Description Below <i>FY 2009 Accomplishments:</i> MDA uses Contractor Logistics Support (CLS) to operate and sustain the AN/TPY-2 radars. The forward-based radar effort includes:	87.475	117.231	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Depot level logistics support Operations and sustainment during testing at Vandenberg Air Force Base (VAFB), CA Operational spares, repair, and replacement Radar operators/maintainers, site maintenance, fuel, utility, and communications support costs</p> <p>For FY 2009, Sensors O&S accomplished the following:</p> <p>Operated and sustained AN/TPY-2 forward-based radars (2) overseas and at other locations supporting BMDS ground/flight testing</p> <p>Provided personnel to support radar operations in Israel and Japan Provided training, facility maintenance, depot support, and spares Provided superdome computer maintenance Operated and maintained site power in Japan Provided generator overhaul and replacements in Japan Supported transition and transfer of TPY-2 forward based radars Provided X-Band Radar (XBR) depot support and spares</p> <p><i>FY 2010 Plans:</i> Operate and sustain AN/TPY-2 forward-based radars (2) overseas and at other locations supporting BMDS ground/flight testing</p> <p>Provide personnel to support radar operations in Israel and Japan Provide training, facility maintenance, depot support, and spares Provide superdome computer maintenance</p>					

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Operate and maintain site power in Japan Provide generator overhaul and replacements in Japan Support transition and transfer of TPY-2 forward based radars Provide XBR depot support and spares Maintain the Groundbased Radar - Prototype (GBR-P) (currently in caretaker status)</p> <p><i>FY 2011 Base Plans:</i> FY 2011 plans are included in project MD11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) See Description Below</p> <p><i>FY 2009 Accomplishments:</i> For UEWR, this program provides for hardware replacement of decades old processing technology and new communications equipment, and the development of new software that supports these missions. For CDU, the program provides for minor changes to existing hardware and new communications equipment, and the development of missile defense software integrated into the existing legacy software.</p> <p>Transferred COBRA DANE to USAF Provided sustainment transition support to the USAF for Beale and Fylingdales Provided maintenance of the System Programming Agency (SPA) sustainment string Installed UEWR software enhancements (VCN-2) Provided sustainment of the upgraded COBRA DANE radar Provided for program management office support personnel</p>		24.113	28.479	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> Provide maintenance of the SPA sustainment string Provide sustainment of the upgraded COBRA DANE radar Continue UEWR/CDU Common Mission software sustainment Achieve Air Force acceptance of VCN-2 (Beale, Fylingdales, Thule) Provide for program management office support personnel</p> <p><i>FY 2011 Base Plans:</i> FY 2011 plans are included in project MD11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDs Radars Communications (Sustainment) See Description Below</p> <p><i>FY 2009 Accomplishments:</i> This operations and support (O&S) effort supports the AN/TPY-2 Communications suites. It includes communications suite operational spares, repair, and replacement; communications operators/maintainers; communications support costs; and sustains 24 hours a day, 365 days a year C2BMC operations.</p> <p>Provided round-the-clock sustainment for C2BMC Communications capabilities associated with AN/TPY-2 Provided on-site C2BMC support of fielded sites for hardware and software Provided C2BMC operator training for fielded capabilities Provided sustaining engineering support and integrated logistics support for fielded hardware and software</p>		18.061	13.901	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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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 2010 Plans:</i> Continue round-the-clock sustainment for Communications capabilities associated with AN/TPY-2 Continue on-site C2BMC support of fielded sites for hardware and software Continue C2BMC operator training for fielded capabilities Continue sustaining engineering support and integrated logistics support for fielded hardware and software</p> <p><i>FY 2011 Base Plans:</i> FY 2011 plans are included in project MD11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	129.649	159.611	0.000	0.000	0.000

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
• 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
	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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 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>
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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 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>
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>											
• 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
• 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

Products and services will be acquired through competitive means to the extent possible and practical.

A Contractor Logistics Support (CLS) contract was awarded to operate and maintain the AN/TPY-2 radars. This is an Indefinite Delivery Indefinite Quantity (IDIQ) task order contract.

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
<p>Beale and Fylingdales UEWR software development will be completed under a follow-on Ground-Based Midcourse Defense (GMD) contract. Long term sustainment will be performed through a USAF radar sustainment activity.</p> <p>The BMDS Communications System Complex - Transportable (BCSC-T) Program Plan addresses the design, development, acquisition, testing, integration, activation, and fielding. The overall executing agent is the Defense Information Systems Agency (DISA) via an existing Memorandum of Agreement (MOA) with MDA.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
BMDS Radars (Sustainment) AN/TPY-2 #2 - Radar Ops, Manning, Depot Support, Site Maintenance, Superdome Maintenance, Training XX11	SS/Various	Raytheon MA	30.200	33.407	Oct 2009	0.000		0.000		0.000	0	63.607	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #2 - Replenishment Spares; Repair and Replace XX11	SS/FPI	Raytheon MA	6.357	4.093	Jul 2010	0.000		0.000		0.000	0	10.450	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #2 - Fuel for Generators, Vehicles, and Security Equipment XX11	TBD/TBD	US Army Japan	3.387	3.590	Oct 2009	0.000		0.000		0.000	0	6.977	Continuing
BMDS Radars (Sustainment) AN/TPY-2 - Warfighter Support XX11	TBD/TBD	BMDSM AL	0.000	3.282	Oct 2009	0.000		0.000		0.000	0	3.282	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #3 - Radar Ops, Manning, Depot Support, Site Maintenance, Superdome	SS/Various	Raytheon MA	29.877	21.730	Apr 2010	0.000		0.000		0.000	0	51.607	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
Maintenance, Training XX11													
BMDS Radars (Sustainment) AN/TPY-2 #3 - Replenishment Spares; Repair and Replace, Site Depot Spares XX11	SS/TBD	Raytheon MA	3.784	4.093	Oct 2009	0.000		0.000		0.000	0	7.877	Continuing
BMDS Radars (Sustainment) AN/TPY-2 - International Transportation XX11	TBD/TBD	TRANSCOM CA	0.690	0.000		0.000		0.000		0.000	0	0.690	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #6 - Spares XX11	SS/FPI	Raytheon MA	0.000	6.395	Jul 2010	0.000		0.000		0.000	0	6.395	Continuing
BMDS Radars (Sustainment) BMDSM Manager Support XX11	TBD/TBD	SMDC AL	2.970	3.000	Oct 2009	0.000		0.000		0.000	0	5.970	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #2 - Replacement Generators XX11	SS/CPAF	Raytheon MA	0.000	5.195	Oct 2009	0.000		0.000		0.000	0	5.195	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #6 - Radar Ops, Manning, Depot Support, Site Maintenance, Superdome	SS/Various	Raytheon MA	0.000	9.361	Jul 2010	0.000		0.000		0.000	0	9.361	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
Maintenance, Training XX11													
BMDS Radars (Sustainment) AN/TPY-2 #5 - Initial Spares (FUR#1) XX11	SS/FPI	Raytheon MA	1.800	7.387	Oct 2009	0.000		0.000		0.000	0	9.187	Continuing
BMDS Radars (Sustainment) Fire Unit Radars Logistical Support XX11	SS/FPI	Raytheon MA	7.762	10.652	Jul 2010	0.000		0.000		0.000	0	18.414	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #3 - EUCOM Operations Support XX11	C/Various	TANADGUSIX AK	0.648	2.046		0.000		0.000		0.000	0	2.694	Continuing
BMDS Radars (Sustainment) GBR-P Caretaker XX11	SS/CPAF	Raytheon CA	0.000	3.000	Oct 2009	0.000		0.000		0.000	0	3.000	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) Cobra Dane System Trainer/CTTO XX11	SS/CPAF	Raytheon MA	2.000	0.000		0.000		0.000		0.000	0	2.000	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) Common Mission	TBD/TBD	Boeing, Raytheon AL, MA	4.685	6.343	Oct 2009	0.000		0.000		0.000	0	11.028	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
Software Sustainment XX11													
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) COBRA DANE Sustainment XX11	SS/CPAF	OGA/Boeing/ Raytheon MA	7.160	8.191	Oct 2009	0.000		0.000		0.000	0	15.351	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) Government Support XX11	TBD/TBD	850 ELSG/KD (UEWR/CD Program Office) MA	7.339	10.221	Oct 2009	0.000		0.000		0.000	0	17.560	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) UEWR Information Assurance XX11	TBD/TBD	TBD TBD	0.000	0.532	Oct 2009	0.000		0.000		0.000	0	0.532	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) Thule Sustainment XX11	SS/CPAF	Raytheon MA	0.000	3.192	Oct 2009	0.000		0.000		0.000	0	3.192	Continuing
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) S/W Deployment	TBD/TBD	ITT Sensor CO	1.931	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
& Transition Support XX11													
Upgraded Early Warning Radars (Beale, Fylingdales, COBRA DANE) UEWR Object Classification XX11	SS/CPAF	Raytheon MA	0.998	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Radars Communications (Sustainment) AN/TPY-2 - Communications O&S XX11	TBD/CPAF	Lockheed Martin Team VA	13.066	11.121	Oct 2009	0.000		0.000		0.000	0	24.187	Continuing
BMDS Radars Communications (Sustainment) AN/TPY-2 - Comms O&S Support XX11	TBD/TBD	DISA VA	4.995	2.780	Oct 2009	0.000		0.000		0.000	0	7.775	Continuing
Subtotal			129.649	159.611		0.000		0.000		0.000			

Remarks

NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			129.649	159.611		0.000		0.000		0.000			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Transfer COBRA DANE to USAF		█																										
Air Force Acceptance of VCN-2 (Beale, Fylingdales, Thule)						█																						

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT XX11: <i>Ballistic Missile Defense Radars Sustainment</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Transfer COBRA DANE to USAF	2	2009	2	2009
Air Force Acceptance of VCN-2 (Beale, Fylingdales, Thule)	1	2010	1	2010

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</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
MD11: <i>BMDS Radars</i>	0.000	0.000	440.023	0.000	440.023	452.561	659.538	630.408	595.040	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

Project MD11 continues efforts described for FY 2009 and 2010 in Projects EX11, WX11, and XX11. These efforts contribute to all four budget objectives of the BMDS: Enhancing Regional Defense, Continuing Viable Homeland Defense, Proving Missile Defense, and Hedging Against Future Threats. Activities in this project include:

- Development, delivery and deployment of AN/TPY-2 radars for either forward-based or Terminal High Altitude Area Defense (THAAD) Fire Unit use to meet warfighter needs (Regional Defense)
- Development of radar discrimination advanced algorithms and Common X-Band software for SBX and AN/TPY-2 radars to address evolving threats (Regional Defense, Homeland Defense)
- System engineering, and software development and testing support (Hedge Against Future Threats)
- Modeling and simulation efforts to include: enhanced sensor models, development of RF scene generators, integration of digital simulations into the BMDS modeling and simulation architecture, and verification, validation, and accreditation (VV&A) of radar models (Proving Missile Defense)
- Implementation of BMDS Unifying Missile Defense Functions (UMDF) to improve BMDS efficiency and effectiveness (Hedging Against Future Threats)
- Participation in BMDS flight and ground test campaigns (Proving Missile Defense)
- Sustainment of deployed radars (Regional Defense, Homeland Defense)
- Continuation of the External Sensors Laboratory (ESL), a test bed to utilize metric sensor data to enhance the efficiency and effectiveness of the overall BMDS (Hedge Against Future Threats)

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
BMDS Radars (Sustainment)	0.000	0.000	115.039	0.000	115.039

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>		PROJECT MD11: <i>BMDS Radars</i>				
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> FY 2009 accomplishments are found in Project XX11.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are found in Project XX11.</p> <p><i>FY 2011 Base Plans:</i> This effort provides for the operation and support of AN/TPY-2 Radars until transferred to a Service component. MDA uses Contractor Logistics Support (CLS) to operate and sustain the AN/TPY-2 Forward Based radars. AN/TPY-2 Fire Unit Radars are operated by the military as part of a Terminal High Altitude Area Defense (THAAD) Battery or Fire Unit. The effort includes:</p> <p>Depot level logistics support for seven AN/TPY-2 radars supporting BMDS forward Based Radar Sites and THAAD Batteries Radar operation & sustainment during integration testing at Vandenberg Air Force Base (VAFB), White Sands Missile Range (WSMR), and Pacific Missile Range Facility (PMRF) or Reagan Test Site (RTS)</p> <p>AN/TPY-2 operational spares, repair, and replacement parts</p> <p>AN/TPY-2 Forward-based Radar operators/maintainers, site maintenance, fuel, utility, and communications support costs</p> <p>Operate and sustain AN/TPY-2 Forward Based Radar sites located in Japan and Israel</p>								

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Sensors Directorate Operations See Description Below <i>FY 2009 Accomplishments:</i> FY09 accomplishments are found in Project EX11. <i>FY 2010 Plans:</i> FY 2010 Plans are found in Project EX11. <i>FY 2011 Base Plans:</i> This effort provides operations support across all MDA Sensors projects. It provides for civilian salaries and travel. In addition, it provides other technical and business operations support services, technical oversight, and performance analysis provided by Federally Funded Research and Development Centers (FFRDCs), University Applied Research Centers (UARCs), and Advisory & Assistance Services. <i>FY 2011 OCO Plans:</i> NA		0.000	0.000	59.251	0.000	59.251
BMDS Level Testing See Description Below <i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project WX11.		0.000	0.000	52.318	0.000	52.318

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>
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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 2010 Plans:</i> FY 2010 plans are found in Project WX11.</p> <p><i>FY 2011 Base Plans:</i> A rigorous test program builds confidence among system stakeholders and sends a powerful message to our adversaries. Working with the Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), MDA has restructured its test program to improve confidence in the missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.</p> <p>The BMDS sensors test program provides for sensors participation in the execution of BMDS testing described in Project MD04 of PE060388C, as well as element-level testing focused on BMDS sensors critical engagement conditions (CEC) and empirical measurement events (EME). CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations. BMDS sensors include AN/TPY-2 (Forward Based Mode), Sea Based X-Band Radar (SBX), COBRA DANE Upgrade (CDU), Upgraded Early Warning Radars (UEWR), and External Sensors Laboratory (ESL). The sensors test organization activities involve two functional areas: Test Planning and Design; and Test Operations. The MDA Directorate for Test provides functional support to the sensors test organization in the areas of: Test Resources; Test Policy, Budget, and Personnel; and Test Readiness and Truth. For FY 2011, the Sensors Program plans to:</p> <p>Plan and execute sensors participation in BMDS flight tests, including Aegis flight test FTM-15, the first test to demonstrate Phased Adaptive Approach capabilities</p> <p>Plan and execute sensors participation in BMDS ground test campaign GT-04</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>Initiate planning for sensors participation in FY 2012 BMDS flight tests and ground tests</p> <p>The FY 2011 test program will execute 68 critical engagement condition/empirical measurement event (CEC/EME)** required data collections to reach a cumulative 76% completion (145 of 190 total) of data collection necessary for verification, validation, and assessment (VV&A) of modeling and simulation. The following table illustrates the CEC/EME data collection schedule for FY 2011 and beyond:</p> <p>Total Collection Opportunities: 190 Pre-FY09: 50 FY09: 14 FY10: 13 FY11: 68 FY12: 9 FY13: 8 FY14: 20 FY15: 5 FY16: 3 Cum Total: Pre-FY09: 50 FY09: 64 FY10: 77 FY11: 145 FY12: 154 FY13: 162 FY14: 182 FY15: 187 FY16: 190 % Executed Cum: Pre-FY09: 26% FY09: 34% FY10: 41% FY11: 76% FY12: 81% FY13: 85% FY14: 96% FY15:98% FY16: 100%</p> <p>**CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>X-Band Basic Program</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project WX11.</p>	0.000	0.000	50.271	0.000	50.271

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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 2010 Plans:</i> FY 2010 plans are found in Project WX11.</p> <p><i>FY 2011 Base Plans:</i> This effort includes risk management, configuration control, design reviews, and integrated product teams supporting software algorithms for discrimination, development of common X-Band software, development of mission profiles to support AN/TPY-2 operations worldwide, enhancement of radar availability at operating locations, and development of critical engagement conditions (CECs) and empirical measurement events (EMEs). CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations. For FY 2011, the Sensors Program plans to:</p> <p>Complete Verification and Validation of the first common software build (CX-1)</p> <p>The common software CX-1 Build consolidates the AN/TPY-2 forward-based mode capabilities release 2.4 and the AN/TPY-2 terminal mode release 4.2.4, increasing the flexibility and interchangeability of those two radars. CX-1 also includes improved baseline terminal mode and forward-based mode discrimination, sensor registration enhancements, interference monitoring, and acquisition sensor tasking. These capabilities will improve ``search/track/discriminate`` performance, expand the range window, and augment threat handling.</p> <p>Continue development of the second common software build (CX-2) for integrated ground testing</p> <p>The common software CX-2 Build consolidates CX-1 functionality with XBR Build 3.0, providing common software for AN/TPY-2 and XBR radars. CX-2 will thus support terminal, forward-based, and midcourse missions. CX-2 also adds a Common X-Band Interface, updates sensor registration bias and covariance, enhances integrated discrimination processing, expands waveform repertoire,</p>					

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B. Accomplishments/Planned Program (\$ in Millions)																							
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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Stimulation Framework (SSF), which is used to conduct and stimulate the hardware and software used in BMDS ground tests with realistic threat scenarios. The SSF utilizes Hardware-in-the-Loop (HWIL) assets to support primarily BMDS ground testing, pre and post flight test mission construction and reconstruction, portions of the training capability, wargames, exercises and BMDS contingency studies, as well as various other use cases to enable BMDS performance in a simulated environment. Each BMDS Element supports the Modeling and Simulation (M&S) Program by providing HWIL representations ready for integration into the BMDS system-level framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and Warfighter needs.</p> <p>For FY 2011, the Sensors Program plans to:</p> <p>Refine AN/TPY-2, COBRA DANE Upgrade (CDU) and UEWR Single Stimulation Framework (formerly MDSE) interfaces to support BMDS Ground Test campaigns Begin development of XBR Concurrent Test, Training and Operations (CTTO) as part of Common X-Band Software (CX-2) Install AN/TPY-2 CTTO Support Unit (CSU) at PACOM for early Warfighter interface and GTD-04 participation</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Radars Modeling & Simulation (M&S)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project WX11.</p>		0.000	0.000	25.971	0.000	25.971

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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 2010 Plans:</i> FY 2010 plans are found in Project WX11.</p> <p><i>FY 2011 Base Plans:</i> The BMD Digital Simulations Architecture (DSA) is the primary M&S System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical tradeoffs, concept analysis and trade studies, as well as providing support for wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support performance assessment (PA) events, which provide critical system level performance data relative to all elements, system engineers, M&S developers, the OTA and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, and portions of ground testing and exercises.</p> <p>SN Modeling and Simulation (M&S) activities support all phases of Sensors development, including development of modifications to the X-Band, UEWR, and COBRA DANE digital representations, flight test missions, ground tests, wargames, exercises, and program assessment. Models and Simulations are tailored to the specific need of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definition studies, to high-fidelity models used to support engineering development, or testing and are integrated into the BMD Digital Simulations Architecture. For FY 2011, the Sensors Program plans to:</p> <p>Develop Capability Release Upgrade Simulation High Fidelity Model (CRUSHM) & Radar Digital Signal Injection System (RDSIS) Models consistent with Common X-band Evolution CX-2 (Common X-Band with Integrated Discrimination)</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>Integrate these into Common BMDS M&S Architectures: (Digital Simulation Architecture (DSA) & Single Stimulation Framework(SSF)) Implement advanced Modeling and Simulation (M&S) improvements identified by the BMDS Verification and Test Design Phase I, II, and III Integrated Planning Exercise to X-Band and UEWR/CDU Digital and Hardware in the Loop (HWIL) models</p> <p>Deliver Verified, Validated and Accredited High Fidelity Digital Radar Models for participation in Program Assessment FY 2011 (PA11)</p> <p>Enhance the Optimistic Modeling Framework Sensor Model (OSM) (formerly DESIM) for Program Assessment (PA) Fidelity for the SBX, COBRA DANE Upgrade (CDU) and UEWR (OSM-S, OSM-C, & OSM-U)</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project XX11.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are found in Project XX11.</p> <p><i>FY 2011 Base Plans:</i> This effort funds the operations and sustainment of the Upgraded Early Warning Radars and the COBRA DANE radar. For the UEWRs, this program provides for hardware replacement of decades</p>	0.000	0.000	22.661	0.000	22.661

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	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total																		
<p>old processing technology and new communications equipment, and the development of new software that supports these missions. For CDU, the program provides for minor changes to existing hardware and new communications equipment, and the development of missile defense software integrated into the existing legacy software. This effort also funds UEWR/CDU Program Office personnel and support staff: salaries, travel, and training. For FY 2011, this program plans to:</p> <p>Provide sustainment of the upgraded COBRA DANE radar Continue UEWR/CDU Common Mission software sustainment Provide for program management office support personnel</p> <p><i>FY 2011 OCO Plans:</i> NA</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>ESL provides engineering-level code to the C2BMC program for maturing the algorithms into robust, operationally suitable code. Full funding for ESL will ensure this precision cue capability is transitioned and fully integrated into the operational BMDS by early 2011 and sets the path for additional capability to be spiraled in to support Early Intercept (EI), mid-course radars, Aegis, and other situational awareness capability. For FY 2011, Sensors plans to:</p> <p>Complete ESL Baseline Release (EBR) 6.0, which adds GEO1 and 3GIRS (Third Generation Infrared Sensor) data as another source to generate improved ESL tracks</p> <p>Develop, deliver, and demonstrate new Overhead Persistent Infrared (OPIR) sensors capability to the BMDS</p> <p>Add capability for Midcourse Radar Cue</p> <p>Demonstrate fusion of Airborne Infrared (ABIR) data with OPIR data for early intercept</p> <p>P3I: Upgrade ESL from obsolete SGI-based hardware to Linux-based hardware</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Sensors Engineering & UMDF See Description Below</p>	0.000	0.000	16.833	0.000	16.833

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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> FY 2009 accomplishments are found in Project WX11.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are found in Project WX11.</p> <p><i>FY 2011 Base Plans:</i> Ballistic Missile Defense System integration is accomplished through the centralized development of seven common missile defense functions called the BMDS ``Unifying Missile Defense Functions`` -- Communications, Sensor Registration, Correlation, System Track, System Discrimination, Battle Management, and Hit-To-Kill Assessment. These unifying functions allow Combatant Commanders to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic missile threats. For FY 2011, in support of BMDS Integrated Build C and Build D, Sensors plans to:</p> <p>Define hit and kill assessment capability for the CX-3 software build and continue development of post-intercept radar scenarios to support hit/kill assessment classifier training and performance testing Complete sensor registration definition; develop real-time sensor bias monitoring and reporting for X-Band Sensors; develop sensor registration for UEWRs and COBRA DANE Improve use of sensor discrimination data, assess correlation feature ability to enhance weapon engagements and improve discrimination on all radars in the Sensors portfolio Support insertion of Integrated Discrimination Processing architecture in the CX-2 common software build Develop sensor control strategies to improve sensor resource management Accomplish Next Generation prototyping and development through delivery of an open architecture sidecar integrated into a tactical string located in the contractor facility</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>Complete Unifying Missile Defense Functions (UMDF) Sidecar (SBX STRING) initial capability Incorporate Integrated Discrimination Processing Implement M&S Improvements to incorporate UMDF functionality to support trade studies for future capabilities</p> <p>Sensors engineering activities also include implementation of Information Assurance, a critical component to ensuring success of the Sensors Mission. The Sensors Information Assurance Program manages the IA process from development through sustainment. For FY 2011, the Program plans to:</p> <p>Conduct Certification and Accreditation for all Sensors Systems Implement DoD 8500 Information Assurance (IA) Policy/ Guidance Conduct Information Assurance/Computer Network Defense (IA/CND) Engineering Requirements Development and Architecture Integration Support Bi-Annual Information Assurance testing for vulnerabilities and Third Party Information Assurance assessments of the Systems</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Element Test and Infrastructure See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p>		0.000	0.000	16.115	0.000	16.115

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> FY 2011 Plans This effort provides development testing not covered under the BMDS Level Testing. Test events are listed below. Testing is focused on BMDS sensors critical engagement conditions (CEC) and empirical measurement events (EME). CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations. BMDS sensors include AN/TPY-2 (Forward Based Mode), Sea Based X-Band Radar (SBX), COBRA DANE Upgrade (CDU), and Upgraded Early Warning Radars (UEWR). For FY 2011, Sensors testing includes:</p> <p>Plan and execute sensors participation in flight tests for additional data collection opportunities to support development progress Execute element-level ground test campaign to support anchoring M&S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) ** Upgrade sensor interfaces to support Single Stimulation Framework (SSF) integration</p> <p>** CEC/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Radars Communications (Sustainment) See Description Below <i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project XX11.</p>		0.000	0.000	13.782	0.000	13.782

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>
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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 2010 Plans:</i> FY 2010 plans are found in Project XX11.</p> <p><i>FY 2011 Base Plans:</i> This Operations and Support (O&S) effort supports the AN/TPY-2 Communications suites. It includes communications suite operational spares, repair, and replacement; communications operators/maintainers; communications support costs; and sustains C2BMC operations 24 hours a day, 365 days a year. For FY 2011, this program plans to:</p> <ul style="list-style-type: none"> Continue round-the-clock sustainment for Communications capabilities associated with AN/TPY-2 Continue on-site C2BMC support of fielded sites for hardware and software Continue C2BMC operator training for fielded capabilities Continue sustaining engineering support and integrated logistics support for fielded hardware and software <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>AN/TPY-2 C2BMC Fielding See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are found in Project EX11.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are found in Project EX11.</p>	0.000	0.000	12.980	0.000	12.980

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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 2011 Base Plans:</i></p> <p>The C2BMC program provides network communications to both task AN/TPY-2 radars and pass radar data to BMDS elements. The Ballistic Missile Defense Systems (BMDS) Communications Networks (BCN) provides a survivable, robust, diverse and redundant, end-to-end, high availability operational communications network (COMNET) connectivity that quickly and unambiguously shares information across the global Ballistic Missile Defense System. The BCN will standardize the BMDS communication systems capabilities at all BMDS locations.</p> <p>The transportable BMDS Communications System Complex (BCSC) locations are designated BCSC - Transportable (BCSC-T) to facilitate the transportability inherent with the radars and engagement management facilities it supports. The BCSC-T will be survivable in accordance with the BMDS Core Standards, especially MDA-STD-001. In addition to the BCSC-T, MDA needs to have a rapidly deployable, re-configurable BMDS communications suite to meet the short term specific needs of MDA missions. The High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN) and the C2BMC Deployable Interface Node (CDIN), a transit case BCN support system will fulfill this requirement for deployable re-configurable BMDS communications suites.</p> <p>The HBCN is an integrated communication suite consisting of two customized HMMWVs and a Tactical Operations Center (TOC). Its purpose is to enable communications between AN/TPY-2 Radar and the C2BMC suite and the rest of the BMDS. The HBCN contains both mission communication equipment and campus communication equipment. One HMMWV will be dedicated to providing the mission communications consisting of a High Availability Communication Node Equipment (HACNE) C2BMC Network Interface Processor (CNIP) and other supporting equipment. The other HMMWV will be dedicated to providing the campus communications consisting of Defense Information Services Network (DISN) Service Delivery Node, Defense Red Switch Network (DRSN), Secret Internet</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>Protocol Router Network (SIPRNET), Non-secure Internet Protocol Router Network (NIPRNET), organic Satellite Communications (SATCOM) and SATCOM interface. All operations can be performed within the HMMWVs or be remotod in a TOC. The TOC is an expandable 20`x20` room capable of supporting the C2BMC operators.</p> <p>The CDIN durable military transit case Ballistic Missile Defense Systems (BMDS) Communications Networks (BCN) support system is both vehicle and facility independent. However, even though it is facility independent it must be installed in some kind of a shelter or building. The recommended facility is the expandable TOC identified for the High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN). The CDIN system will be capable of providing the mission and campus communications for a rapidly deployed AN/TPY-2 Radar.</p> <p>Also, the Extremely High Frequency (EHF) Teleports will be upgraded to provide AN/TPY-2 data to Ground Based Midcourse (GMD) and Aegis ;engagement to alleviate the vulnerability of Ultra High Frequency (UHF) communications. This satisfies a Combatant Command (COCOM) requirement for EHF operational capability due to continuous issues with UHF communications supporting the BMDS mission. Locations: United States -- Northwest, VA; Wahiawa, HI. International -- Ramstein; and Bahrain. These teleport terminals provide an entry point (Northwest at Chesapeake, VA) into the US from the European Gateway. These upgrades include an X/Ka-Band capability, and associated baseband equipment. They will provide the BMDS necessary satellite communications connectivity to the European Gateway at Ramstein. This funding supports the BMDS essential minimum communications connectivity provisions for robust, redundant, secure, survivable communications path directly in the BMDS and GMD Fire Control (GFC). These teleports provide multiple diverse network routing paths to ensure no single points of failure.</p> <p>For FY 2011, this program plans to:</p>					

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Acquisition of MET SATCOM X/Ka-band capability for teleport upgrades BMDS Communications Systems integration and certifications Support exercises and tests of the AN/TPY-2 radar system with the BMDS Communications Networks (HBCN and transit case support systems) Complete communications teleports in the Middle East and Northwest VA <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	440.023	0.000	440.023

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
• 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
	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDs Radars</i>
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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 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>
• 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226

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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>
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>											
• 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
• 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

Products and services will be acquired with competitive means to the extent possible and practical.

The Consolidated - Contractor Logistics Support (C-CLS) contract was awarded in FY08 to operate and maintain the AN/TPY-2 radars and provide logistical support for other radars in the BMDS Radars PE. The C-CLS contract provides the operations and support activities required for site surveys, planning, relocation, depot maintenance, forward-based system operations, repair, and replacement. The contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract.

AN/TPY-2 #7 radar manufacturing is being done on a Cost Plus Incentive Fee (CPIF) CLIN.

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<p>Test & Evaluation projects use multiple existing development contracts depending on the system(s) involved in the testing.</p> <p>The BMDS radar (AN/TPY-2, Forward-Based) project used an existing radar design to minimize development costs and schedule. Design enhancements focus on software changes for the forward based algorithms and C2BMC connectivity.</p> <p>The Common Software work will begin on the existing AN/TPY-2 development contract. The BCSC-T Program Plan addresses the design, development, acquisition, testing, integration, activation, and fielding. The overall executing agent is the Program Manager - Communications and Transmission Systems (PMDCATS). Lockheed Martin Mission Systems, C2BMC prime contractor via an Other Transaction Agreement, provides on-site support.</p> <p>MDA will transition from legacy System Engineering and Technical Services contracts to an enterprise-wide Advisory & Assistance Services (A&AS) contract. The A&AS contract will be competitive. The objectives are to implement national engineering and support services for the BMDS mission across the agency; enhance the sharing of BMD expertise and knowledge; centralize the acquisition of support services manpower in a more efficient manner; and reduce overhead costs. In addition to engineering and technical services, A&AS includes studies, analysis and evaluation; and management and professional services.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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			
Sensors Directorate Operations Govt Salaries, Travel, Training (MDA Sensors) MD11	TBD/TBD	MDA AL, VA	0.000	0.000		24.335	Jul 2011	0.000		24.335	Continuing	Continuing	Continuing
Sensors Directorate Operations Contractor Support Services, FFRDC/UARC MD11	Various/ Various	CSS, APL, LL, OGA AL/MA/VA/MD	0.000	0.000		30.144	Jul 2011	0.000		30.144	Continuing	Continuing	Continuing
Sensors Directorate Operations Other Govt Agencies MD11	TBD/TBD	SMDC AL	0.000	0.000		4.772	Jul 2011	0.000		4.772	Continuing	Continuing	Continuing
X-Band Basic Program X-Band Software Enhancements/ Development MD11	SS/CPAF	Raytheon MA	0.000	0.000		38.271	Jan 2011	0.000		38.271	Continuing	Continuing	Continuing
X-Band Basic Program Wildcat Software Development MD11	SS/CPAF	Raytheon MA	0.000	0.000		12.000	Oct 2010	0.000		12.000	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) M&S Program Support MD11	SS/CPAF	Raytheon MA	0.000	0.000		12.213	Oct 2010	0.000		12.213	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S) VV&A of Models MD11	SS/CPAF	Raytheon MA	0.000	0.000		11.200	Jan 2011	0.000		11.200	Continuing	Continuing	Continuing
BMDS Radars Modeling & Simulation (M&S)	SS/Various	Raytheon, Boeing MA, AL	0.000	0.000		0.962	Jan 2011	0.000		0.962	Continuing	Continuing	Continuing

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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			
Legacy Models Support MD11													
BMDs Radars Modeling & Simulation (M&S) Warfighter Exercises MD11	SS/CPAF	Raytheon MA	0.000	0.000		1.596		0.000		1.596	Continuing	Continuing	Continuing
External Sensors External Sensors - Prime MD11	SS/CPAF	NG (RaPID) CO	0.000	0.000		13.148	Oct 2010	0.000		13.148	Continuing	Continuing	Continuing
External Sensors Independent Analysis for ESL MD11	TBD/TBD	NSWC-DD VA	0.000	0.000		1.103	Oct 2010	0.000		1.103	Continuing	Continuing	Continuing
External Sensors Truth Sources / Advanced Algorithms MD11	TBD/TBD	NASIC (WPAFB) OH	0.000	0.000		0.552	Oct 2010	0.000		0.552	Continuing	Continuing	Continuing
External Sensors ESL Support MD11	SS/CPAF	MDIOC CO	0.000	0.000		1.324	Oct 2010	0.000		1.324	Continuing	Continuing	Continuing
External Sensors Site 2 MD11	TBD/TBD	Site 2 TBD	0.000	0.000		1.103	Oct 2010	0.000		1.103	Continuing	Continuing	Continuing
External Sensors Technical Expertise MD11	SS/CPAF	SCITEC STTR CO	0.000	0.000		0.717	Oct 2010	0.000		0.717	Continuing	Continuing	Continuing
External Sensors Site 15 MD11	TBD/TBD	Site 15 TBD	0.000	0.000		0.552	Oct 2010	0.000		0.552	Continuing	Continuing	Continuing
External Sensors FFRDC MD11	SS/CPAF	FFRDC CO	0.000	0.000		0.443	Oct 2010	0.000		0.443	Continuing	Continuing	Continuing

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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			
Sensors Engineering & UMDF UMDF (Correlation & System Track) MD11	SS/CPAF	Raytheon MA	0.000	0.000		2.748	Oct 2010	0.000		2.748	Continuing	Continuing	Continuing
Sensors Engineering & UMDF UMDF (Hit/Kill Assessment) MD11	SS/CPAF	Raytheon MA	0.000	0.000		1.000	Oct 2010	0.000		1.000	Continuing	Continuing	Continuing
Sensors Engineering & UMDF UMDF (Sensor Registration) MD11	SS/Various	Raytheon, Torch, Various MA, Various	0.000	0.000		1.000	Oct 2010	0.000		1.000	Continuing	Continuing	Continuing
Sensors Engineering & UMDF Radar Roadmap Tech Demos/Studies MD11	SS/Various	Raytheon, Various MA, Various	0.000	0.000		5.800	Jan 2011	0.000		5.800	Continuing	Continuing	Continuing
Sensors Engineering & UMDF SBX Sidecar & Demonstrations MD11	SS/CPAF	Raytheon MA	0.000	0.000		1.500	Jan 2011	0.000		1.500	Continuing	Continuing	Continuing
Sensors Engineering & UMDF Technology Assessments MD11	SS/Various	Raytheon MA	0.000	0.000		2.785	Jan 2011	0.000		2.785	Continuing	Continuing	Continuing
Sensors Engineering & UMDF Information Assurance AN/TPY-2 (C-CLS/GMD CCC/ X00047) MD11	SS/CPAF	Raytheon MA	0.000	0.000		1.750	Oct 2010	0.000		1.750	Continuing	Continuing	Continuing
Sensors Engineering & UMDF Information	SS/CPAF	Raytheon MA	0.000	0.000		0.250	Oct 2010	0.000		0.250	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDs Radars</i>
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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			
Assurance SBX (C-CLS/ GMD CCC/X00047) MD11													
AN/TPY-2 C2BMC Fielding AN/TPY-2 Teleport MD11	TBD/TBD	DISA, SPAWAR VA	0.000	0.000		7.487	Oct 2010	0.000		7.487	Continuing	Continuing	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 US Comms/PAAWNS MD11	TBD/TBD	DISA VA	0.000	0.000		2.387	Oct 2010	0.000		2.387	Continuing	Continuing	Continuing
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Fielding MD11	TBD/TBD	DISA VA	0.000	0.000		3.106	Oct 2010	0.000		3.106	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		184.248		0.000		184.248			

Remarks

NA

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			
BMDs Radars (Sustainment) AN/TPY-2	SS/CPAF	Raytheon MA	0.000	0.000		18.971	Oct 2010	0.000		18.971	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</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			
Infrastructure/Depot Support MD11													
BMDS Radars (Sustainment) AN/TPY-2 #2 Operations and Sustainment MD11	SS/CPAF	Raytheon MA	0.000	0.000		17.623	Oct 2010	0.000		17.623	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 International Transport for R&R MD11	TBD/TBD	DFAS IN	0.000	0.000		1.104	Jul 2011	0.000		1.104	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #2 Fuel/Commercial Power MD11	SS/Various	DESC, USARJ VA, Japan	0.000	0.000		2.080	Jul 2011	0.000		2.080	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #2 Site & Facility Maintenance MD11	SS/Various	Raytheon, 94th AAMDC MA, HI	0.000	0.000		2.673	Oct 2010	0.000		2.673	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 Generator Replacement MD11	SS/CPAF	Raytheon MA	0.000	0.000		5.302	Oct 2010	0.000		5.302	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #3 Operations & Sustainment MD11	SS/CPAF	Raytheon MA	0.000	0.000		16.464	Oct 2010	0.000		16.464	Continuing	Continuing	Continuing
	TBD/TBD	DESC	0.000	0.000		2.530	Jul 2011	0.000		2.530	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</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			
BMDS Radars (Sustainment) AN/TPY-2 #3 Generator & Fuel MD11		Israel											
BMDS Radars (Sustainment) AN/TPY-2 #3 Site & Facility Maintenance MD11	SS/Various	Raytheon, US Army MA, Europe	0.000	0.000		5.220	Oct 2010	0.000		5.220	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #6 Operations & Sustainment MD11	SS/CPAF	Raytheon MA	0.000	0.000		16.334	Oct 2010	0.000		16.334	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #6 Fuel/Commercial Power MD11	TBD/TBD	DES Center TBD	0.000	0.000		1.039	Jul 2011	0.000		1.039	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 #6 Site & Facility Maintenance MD11	SS/Various	Raytheon, US Army MA	0.000	0.000		5.246	Oct 2010	0.000		5.246	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) Army Hybrid Program Office MD11	TBD/TBD	SMDC AL	0.000	0.000		2.000	Oct 2010	0.000		2.000	Continuing	Continuing	Continuing
BMDS Radars (Sustainment) AN/TPY-2 FUR CLS MD11	SS/Various	Raytheon MA	0.000	0.000		17.114		0.000		17.114	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</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			
BMDS Radars (Sustainment) AN/TPY-2 Transition & Transfer MD11	TBD/TBD	SMDC AL	0.000	0.000		1.339		0.000		1.339	Continuing	Continuing	Continuing
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment COBRA DANE Upgrade Sustainment MD11	SS/FFP	Raytheon MA	0.000	0.000		8.404	Jan 2011	0.000		8.404	Continuing	Continuing	Continuing
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment UEWR-CD Common Mission Software Sustainment MD11	SS/CPAF	Raytheon MA	0.000	0.000		6.110	Jan 2011	0.000		6.110	Continuing	Continuing	Continuing
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment UEWR-CD Program Office Support MD11	TBD/TBD	Hanscom AFB MA	0.000	0.000		8.147	Jul 2011	0.000		8.147	Continuing	Continuing	Continuing
BMDS Radars Communications (Sustainment) AN/TPY-2 Comms Sustainment MD11	Various/ Various	Lockheed Martin Team, DISA VA	0.000	0.000		13.782	Oct 2010	0.000		13.782	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDs Radars</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			
Subtotal			0.000	0.000		151.482		0.000		151.482			

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			
BMDS Level Testing AN/TPY-2 FT & GT MD11	SS/CPAF	Raytheon MA	0.000	0.000		23.052	Oct 2010	0.000		23.052	Continuing	Continuing	Continuing
BMDS Level Testing UEWR/CD FT & GT MD11	SS/Various	Raytheon, Boeing MA,AL	0.000	0.000		10.313	Oct 2010	0.000		10.313	Continuing	Continuing	Continuing
BMDS Level Testing Thule Upgrade FT & GT MD11	C/Various	Raytheon, Boeing MA/AL	0.000	0.000		2.260	Oct 2010	0.000		2.260	Continuing	Continuing	Continuing
BMDS Level Testing SBX FT & GT MD11	SS/Various	Raytheon, Boeing MA/AL	0.000	0.000		15.445	Oct 2010	0.000		15.445	Continuing	Continuing	Continuing
BMDS Level Testing External Sensors Lab FT & GT Support MD11	Various/Various	NG, MDIOC CA, CO	0.000	0.000		1.248		0.000		1.248	Continuing	Continuing	Continuing
	SS/CPAF	Raytheon	0.000	0.000		11.604	Oct 2010	0.000		11.604	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>
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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			
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure AN/TPY-2 SSF/CTTO/RDSIS Upgrade MD11		MA											
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure Thule UEWR CTTO Infrastructure MD11	SS/CPAF	Raytheon MA	0.000	0.000		0.426	Oct 2010	0.000		0.426	Continuing	Continuing	Continuing
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure SBX CTTO Infrastructure MD11	SS/CPAF	Raytheon MA	0.000	0.000		12.128		0.000		12.128	Continuing	Continuing	Continuing
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure UEWR/CD CTTO Infrastructure MD11	SS/CPAF	Raytheon MA	0.000	0.000		11.702		0.000		11.702	Continuing	Continuing	Continuing
Element Test and Infrastructure TPY-2 SSF Integration & Infrastructure, Sys Test Lab MD11	SS/CPAF	Raytheon MA	0.000	0.000		6.368	Apr 2011	0.000		6.368	Continuing	Continuing	Continuing

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDs Radars</i>
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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			
Element Test and Infrastructure UEWR/ CD SSF Integration & Infrastructure, Sys Test Lab MD11	SS/Various	Boeing, Raytheon AL, MA	0.000	0.000		1.170	Apr 2011	0.000		1.170	Continuing	Continuing	Continuing
Element Test and Infrastructure ESL SSF Integration MD11	TBD/TBD	AFSPC CO	0.000	0.000		0.646		0.000		0.646	Continuing	Continuing	Continuing
Element Test and Infrastructure SBX SSF Integration & Infrastructure, Sys Test Lab MD11	SS/CPAF	Boeing AL	0.000	0.000		6.431		0.000		6.431	Continuing	Continuing	Continuing
Element Test and Infrastructure Thule SSF Integration & Sys Test Lab MD11	SS/CPAF	Boeing AL	0.000	0.000		1.500		0.000		1.500	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		104.293		0.000		104.293			

Remarks
NA

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>
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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
	0.000	0.000		440.023		0.000		440.023			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDs Radars</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
UEWR Simulator Tester (Beale, Fylingdales, Thule) Delivered									■																			
CTTO AN/TPY-2 Initial Capability Delivered												■																
External Sensors Lab (ESL) Baseline Software Release 6.0 Delivered												■																
UMDF Sidecar for SBX Delivered (Software Delivery)												■																
Prime Power Units (PPU) #7 & #8 Delivered													■															
Refurbished AN/TPY-2 Radar #4 Delivered														■														
External Sensors Lab (ESL) Baseline Software Release 7.0 Delivered														■														
Common X-Band Radar Software (CX-2) Delivered															■													
External Sensors Lab (ESL) Baseline Software Release 8.0 Delivered																■												
External Sensors Lab (ESL) Baseline Software Release 9.0 Delivered																				■								
Common X-Band Radar Software (CX-3) Delivered																											■	
External Sensors Lab (ESL) Baseline Software Release 10.0 Delivered																												■

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Exhibit R-4A, RDT&E Schedule Details: 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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD11: <i>BMDS Radars</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
UEWR Simulator Tester (Beale, Fylingdales, Thule) Delivered	1	2011	1	2011
CTTO AN/TPY-2 Initial Capability Delivered	4	2011	4	2011
External Sensors Lab (ESL) Baseline Software Release 6.0 Delivered	4	2011	4	2011
UMDF Sidecar for SBX Delivered (Software Delivery)	4	2011	4	2011
Prime Power Units (PPU) #7 & #8 Delivered	3	2012	3	2012
Refurbished AN/TPY-2 Radar #4 Delivered	4	2012	4	2012
External Sensors Lab (ESL) Baseline Software Release 7.0 Delivered	4	2012	4	2012
Common X-Band Radar Software (CX-2) Delivered	2	2013	2	2013
External Sensors Lab (ESL) Baseline Software Release 8.0 Delivered	4	2013	4	2013
External Sensors Lab (ESL) Baseline Software Release 9.0 Delivered	4	2014	4	2014
Common X-Band Radar Software (CX-3) Delivered	3	2015	3	2015
External Sensors Lab (ESL) Baseline Software Release 10.0 Delivered	4	2015	4	2015

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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 0603884C: <i>Ballistic Missile Defense Sensors</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>	44.602	35.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	79.709
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11.

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	44.602	35.107	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 0603884C: <i>Ballistic Missile Defense Sensors</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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	44.602	35.107	0.000	0.000	0.000

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
• 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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD40: <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
MD40: <i>Program-Wide Support</i>	0.000	0.000	14.836	0.000	14.836	17.028	21.859	20.117	21.302	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

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> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA	0.000	0.000	14.836	0.000	14.836

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD40: <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	0.000	0.000	14.836	0.000	14.836

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
• 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

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603884C: <i>Ballistic Missile Defense Sensors</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

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-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 0603886C: <i>Ballistic Missile Defense System Interceptor</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	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869
<i>WX13: Ballistic Missile Defense Interceptor Capability Development</i>	293.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	293.969
<i>ZX40: Program-Wide Support</i>	14.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	14.900

Note

NA

A. Mission Description and Budget Item Justification

The Kinetic Energy Interceptors (KEI) mission is to develop a mobile, multi-use (boost, ascent, midcourse) kinetic energy intercept capability to enhance the layered defense performance of the Ballistic Missile Defense System (BMDS). Kinetic Energy Interceptor's unique mobility and performance combination brings to the BMDS the capability to engage threats in the early, forward portion of the BMDS battle space. The interceptor design concept is compatible with land-mobile and sea-mobile operations and features a high performance booster designed to carry multiple payload types. The Kinetic Energy Interceptor's common booster will be capable of carrying Multiple Kill Vehicles (MKVs) and other advanced payloads to identify, seek out, and destroy lethal objects within a threat cluster in the future capability development block. With a multiple kill vehicle payload, more objects can be destroyed with one interceptor. This would save interceptor inventory, reduce infrastructure costs, and improve overall probability of engagement success for the BMDS. Kinetic Energy Interceptor's mobility, fast acceleration, and capability to close the fire control loop during the boost phase enable delivery of these payloads early in the midcourse timeline. Kinetic Energy Interceptor's ability to execute its suite of missions is enabled by a flexible fire control design that allows the interceptor to receive data from a diverse suite of ballistic missile defense sensors (land, sea, and space), fuse this information in real time, and execute an effective intercept. By adding a boost phase kinetic energy intercept layer and flexible ascent/midcourse capabilities to future BMDS capabilities, Kinetic Energy Interceptor enables the MDA to pace the threat, fill performance gaps, and increase BMDS effectiveness.

Concurrent with the release of the FY 2010 PB submission, the Agency terminated the Kinetic Energy Interceptor program.

The Kinetic Energy Interceptor Program Office is implementing a Program Termination Plan that focuses on an orderly program shutdown. This plan includes the identification of program deliverables and/or salvageable technologies that have value to other Government entities, as well as disposition of all manpower

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i>	PE 0603886C: <i>Ballistic Missile Defense System Interceptor</i>
BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	

authorizations and personnel involved in the program. Finally, the plan addresses requirements for data and drawings storage, program documentation, and configuration management, and Kinetic Energy Interceptor program office files and records.

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	385.493	0.000	0.000	0.000	0.000
Current President's Budget	308.869	0.000	0.000	0.000	0.000
Total Adjustments	-76.624	0.000	0.000	0.000	0.000
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	-20.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-7.628	0.000			
• SBIR/STTR Transfer	-5.740	0.000			
• Other Adjustment Detail	-43.256	0.000	0.000	0.000	0.000

Change Summary Explanation

FY 2009 decrease is the result of Mid-Year budget reductions, SBIR/STTR transfer, FY10 Appropriation language directed rescission of FY09 funds, and MDA reprogrammings.

No FY2011 data provided in PB10.

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>				PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>				
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>WX13: Ballistic Missile Defense Interceptor Capability Development</i>	293.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	293.969
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

NA

A. Mission Description and Budget Item Justification

The Kinetic Energy Interceptors (KEI) mission is to develop a mobile, multi-use (boost, ascent, midcourse) kinetic energy intercept capability to enhance the layered defense performance of the Ballistic Missile Defense System (BMDS). Kinetic Energy Interceptor's unique mobility and performance combination brings to the BMDS the capability to engage threats in the early, forward portion of the BMDS battle space. The interceptor design concept is compatible with land-mobile and sea-mobile operations and features a high performance booster designed to carry multiple payload types. The Kinetic Energy Interceptor common booster will be capable of carrying advanced payloads to identify, seek out, and destroy lethal objects within a threat cluster in the future capability development block. With a multiple kill vehicle payload, more objects can be destroyed with one interceptor. This would save interceptor inventory, reduce infrastructure costs, and improve overall probability of engagement success for the BMDS. Kinetic Energy Interceptor's mobility, fast acceleration, and capability to close the fire control loop during the boost phase enable delivery of these payloads early in the midcourse timeline. Kinetic Energy Interceptor's ability to execute its suite of missions is enabled by a flexible fire control design that allows the interceptor to receive data from a diverse suite of ballistic missile defense sensors (land, sea, and space), fuse this information in real time, and execute an effective intercept. By adding a boost phase kinetic energy intercept layer and flexible ascent/midcourse capabilities to future BMDS capabilities, Kinetic Energy Interceptor enables the MDA to pace the threat, fill performance gaps, and increase BMDS effectiveness.

Concurrent with the release of the FY 2010 PB submission, the Agency terminated the Kinetic Energy Interceptor program.

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

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Termination and Closeout See Description Below <i>FY 2009 Accomplishments:</i> Implemented program termination Identified program deliverables and/or salvageable technologies Implemented termination contracting activity Identified and archived drawings, program documentation and technical documentation Implemented schedule of proposed draw down of manpower authorization Dispositioned hardware assets <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA		61.160	0.000	0.000	0.000	0.000
Interceptor See Description Below <i>FY 2009 Accomplishments:</i> Conducted one Stage 1 rocket motor static fire to validate performance Completed final integration and testing of FTK-01 pathfinder vehicle and conducted pathfinding activities at Vandenberg Air Force Base (VAFB) Completed 80% of avionics qualifications testing		173.705	0.000	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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Completed booster avionics assembly and delivered stage 1 and 2 booster flight motors to VAFB for integration <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA						
Element Engineering See Description Below <i>FY 2009 Accomplishments:</i> Conducted Director's Assessment of ;Kinetic Energy Interceptor ;Utility to the BMDS <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA		39.286	0.000	0.000	0.000	0.000
Test and Evaluation See Description Below		2.996	0.000	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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>				
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> Delivered ;draft launch operation requirements document for FTK-01 to VAFB Executed simulated launch of pathfinder</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>						
<p>Systems Engineering and Program Management See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Provided management, leadership, and planning for all activities to include termination ; Provided salaries, travel, and project-wide support, to include security Provided Quality, Safety, and Mission Assurance (QSMA) operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> NA</p>		16.822	0.000	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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	293.969	0.000	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
• 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

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

The Kinetic Energy Interceptors (KEI) development and test acquisition strategy focused on developing gap-filling, multi-use kinetic energy capabilities for strategically deployable land-mobile and sea-mobile platforms. The Kinetic Energy Interceptor element is being developed under a single prime contractor selected competitively at the start of development. The revised acquisition strategy for Kinetic Energy Interceptor is for payloads to be budgeted and developed under other BMDS elements that deliver each payload for integration into the Kinetic Energy Interceptor element.

In FY 2009 the Kinetic Energy Interceptor Program Office implemented a Program Termination Plan. This plan included all activities required for close-out. The Program Office conducted Termination activities under the Termination Contracting Officers (TCO) direction.

E. Performance Metrics

NA

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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			
Termination and Closeout Termination & Closeout WX13	Various/ Various	Northrop Grumman Huntsville, AL	54.800	0.000		0.000		0.000		0.000	0	54.800	54.800
Termination and Closeout Hardware Disposition WX13	TBD/TBD	AMCOM - Eglin Air Force Base, FL Edwards Air Force Base, CA	6.360	0.000		0.000		0.000		0.000	0	6.360	6.360
Interceptor Interceptor WX13	C/CPAF	Northrop Grumman - VA, AL, CA, PA Raytheon & Orbital - AZ, ATK-MD, UT	173.705	0.000		0.000		0.000		0.000	0	173.705	173.705
Element Engineering Contractor Element Engineering WX13	C/CPAF	Northrop Grumman - VA, AL, CA, PA Raytheon & Orbital - AZ, ATK-MD, UT	39.286	0.000		0.000		0.000		0.000	0	39.286	39.286
Element Engineering Contractor Kinetic Energy Interceptor BMDS KV Engineering and Development WX13	C/CPFF	Northrop Grumman - VA, AL Raytheon, AZ	0.000	0.000		0.000		0.000		0.000	0	0	0
Systems Engineering and Program Management	Various/ Various	Missile Defense Agency Huntsville, AL	0.000	0.000		0.000		0.000		0.000	0	0	0

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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			
Government Furnished Equipment WX13													
Systems Engineering and Program Management CG(X) Sea-Based Modular Launcher WX13	C/CPAF	Northrop Grumman Fairfax, VA; Sunnyvale, CA	0.000	0.000		0.000		0.000		0.000	0	0	0
Subtotal			274.151	0.000		0.000		0.000		0.000	0.000	274.151	274.151

Remarks

NA

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			
Systems Engineering and Program Management SETA WX13	C/FFP	MEI Huntsville, AL	12.883	0.000		0.000		0.000		0.000	0	12.883	12.883
Systems Engineering and Program Management Other	TBD/TBD	SMDC/Tybrin, Navy ICP-PA DCMA - Fairfax, VA	0.146	0.000		0.000		0.000		0.000	0	0.146	0.146

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor 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			
Government Agencies WX13													
Systems Engineering and Program Management Security Support WX13	TBD/TBD	DISA Colorado Springs, CO	0.000	0.000		0.000		0.000		0.000	0	0	0
Systems Engineering and Program Management BMDS Interfaces, BMDS SIM WX13	TBD/TBD	Various/JRDC/MDA/System Engineering -	0.000	0.000		0.000		0.000		0.000	0	0	0
Subtotal			13.029	0.000		0.000		0.000		0.000	0.000	13.029	13.029

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			
Test and Evaluation National Environmental Protection Agency (NEPA) WX13	TBD/TBD	SMDC Huntsville, AL	0.177	0.000		0.000		0.000		0.000	0	0.177	0.177

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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			
Test and Evaluation Range Support WX13	TBD/TBD	VAFB CA	0.762	0.000		0.000		0.000		0.000	0	0.762	0.762
Test and Evaluation TEDAC and TM Ops for FTK-01 and FTK-02 WX13	TBD/TBD	SMDC/Gray Research Huntsville, AL	0.002	0.000		0.000		0.000		0.000	0	0.002	0.002
Test and Evaluation Stage 1 & 2 Separation Analysis WX13	C/FFP	AMCOM/Craft Tech/Calspan Pipersville, PA/ Buffalo, NY	2.055	0.000		0.000		0.000		0.000	0	2.055	2.055
Test and Evaluation NASA Wallops - Flight Experiment Support WX13	TBD/TBD	Wallops Flight Facility VA	0.000	0.000		0.000		0.000		0.000	0	0	0
Subtotal			2.996	0.000		0.000		0.000		0.000	0.000	2.996	2.996

Remarks
NA

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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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			
Systems Engineering and Program Management Civilian Salaries and Travel WX13	TBD/TBD	Missile Defense Agency Huntsville, AL	2.817	0.000		0.000		0.000		0.000	0	2.817	2.817
Systems Engineering and Program Management Engineering Program Support WX13	C/FFP	COLSA Corp, Huntsville, AL AMRDEC, Huntsville, AL	0.976	0.000		0.000		0.000		0.000	0	0.976	0.976
Subtotal			3.793	0.000		0.000		0.000		0.000	0.000	3.793	3.793

Remarks

NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	293.969	0.000	0.000	0.000	0.000	0.000	293.969	293.969

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Stage 1 Rocket Motor Static Fire Three																																

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Exhibit R-4A, RDT&E Schedule Details: 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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT WX13: <i>Ballistic Missile Defense Interceptor Capability Development</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Stage 1 Rocket Motor Static Fire Three	1	2009	1	2009

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</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>	14.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	14.900
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	14.900	0.000	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 0603886C: <i>Ballistic Missile Defense System Interceptor</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
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	14.900	0.000	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
• 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

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>											
• 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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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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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 0603886C: <i>Ballistic Missile Defense System Interceptor</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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			

Remarks
NA

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			
Project Cost Totals	0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)				PE 0603888C: Ballistic Missile Defense Test and Targets							
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	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
AX04: Test & Evaluation Block 1.0	6.934	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	6.934
EX05: Targets & Countermeasures Supports Block 5.0	40.393	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	40.393
BX04: Test & Evaluation Block 2.0	32.989	0.792	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	33.781
CX04: Test & Evaluation Block 3.0	32.370	4.633	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	37.003
EX04: Test & Evaluation Block 5.0	20.274	8.784	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	29.058
WX04: Test & Evaluation Capability Development	18.509	71.461	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	89.970
XX04: Concurrent, Test, Training & Ops (CTTO)	36.017	35.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	71.543
YX04: Test & Evaluation	278.457	273.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	551.948
MD04: Test Program	0.000	0.000	559.133	0.000	559.133	477.588	453.047	435.093	399.100	Continuing	Continuing
BX05: Targets & Countermeasures Supports Block 2.0	86.168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	86.168
CX05: Targets & Countermeasures Supports Block 3.0	43.277	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	43.277
WX05: Targets & Countermeasures Supports Capability Development	29.587	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	29.587
YX05: Targets and Countermeasures Core	258.816	405.905	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	664.721
MD05: Targets Program	0.000	0.000	517.065	0.000	517.065	587.940	467.401	409.499	401.416	Continuing	Continuing

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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE								
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>								
ZX40: <i>Program-Wide Support</i>	23.161	22.741	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	45.902
MD40: <i>Program-Wide Support</i>	0.000	0.000	37.227	0.000	37.227	40.431	30.923	27.337	29.092	Continuing	Continuing	

Note

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.

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects AX04, CX04, DX04, EX04, WX04, XX04, and YX04 for FY 2009-FY 2010 is now captured in Project MD04. The content previously planned in Projects BX05, CX05, EX05, WX05, and YX05 for FY 2009-FY 2010 is now captured in Project MD05.

A. Mission Description and Budget Item Justification

The FY 2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated Ballistic Missile Defense System (BMDS) architecture to counter existing regional threats, continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities -- weapons, sensors, and Command and Control Battle Management and Communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide both the best sensor information on the enemy missile's location and track as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack -- all connected by a unifying C2BMC system. As a result, an effort funded in a Program Element may be critical to the success of efforts in the other Program Elements -- we refer to these connections as "interdependencies". Throughout the budget justification materials we have attempted to highlight interdependencies in order to fully explain the relationship between different parts of the proposed program.

As part of the total Ballistic Missile Defense System (BMDS), the Test and Targets Program Element (PE) provides the resources, including targets and countermeasures development, for an integrated system-level test approach, bringing together the capabilities of the BMDS elements.

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>

The BMD Test organization executes tests to prove out BMDS Integrated Build C and Build D capabilities of:

- Broad Ocean Area Boost Phase and Burn Out State Data
- C2BMC Generation of Link-16 based BMD System Track
- Aegis BMD Launch on Link-16 based BMD System Track
- Terminal High Altitude Area Defense (THAAD) Extremely High Frequency
- Warfighter Elements of Essential Information
- Peer-to-Peer Engagement Coordination limited (Aegis-Aegis, THAAD-PATRIOT)
- Improved Sensor Registration (C2BMC, Aegis)
- Increased Peer-to-Peer Engagement Coordination

The Missile Defense Agency (MDA) recently initiated a systematic review of BMDS testing that will establish a new convention for setting test objectives that go beyond simply exercising newly delivered elements of the system. For the BMDS test Program, MDA is transitioning from ``architecture-based`` test objectives to ``technical parameter-based`` test objectives to anchor models and simulations (M&S). The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all combinations of BMDS configurations and engagements.

Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) are the conditions and events ;where data is obtained from flight and ground tests in order to anchor models and simulations. CECs and ;EMEs are utilized to design ;a test engagement to further advance the understanding and confidence of the modeling and simulation associated with all possible engagements. In FY 2009, BMD System Level CECs and EMEs were identified. By the end of FY10, BMD System Level CECs and EMEs are projected to yield 33% of the data collected in the Test Program reflected in the Integrated Master Test Plan (IMTP). For FY 2011, there are scheduled to be 928 collection opportunities for BMD System Level CECs and EMEs, yielding 47% of the data to be collected in the Test Program reflected in the IMTP. This yield is projected to reach 60% by end of FY 2012, 74% by end of FY 2013, 77% by end of FY 2014, and 94% by end of FY 2015.

MDA testing is based on an integrated, comprehensive, and phased test program. MDA ground tests emulates the quality of service (that is, data of sufficient accuracy and low enough latency) of C2BMC and sensors. Testing Element systems, subsystems, and components early in the development is necessary prior to conducting BMD-System level testing. The Element Level testing is funded as part of an Element developmental program and contained in their respective Program Element (PE) submissions. This PE provides consolidated MDA-wide capabilities and resources for the, planning, design, execution, provision of infrastructure, and management

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>
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of BMD System testing. This PE also provides funding to the Operational Test Agencies (OTA) which are active in all phases of test planning, execution and post-test analysis, to include the development of the IMTP. The Missile Defense Agency IMTP established and documents the test requirements for the BMDS with specific focus on collecting the data needed for the Verification, Validation and Accreditation (VV&A) of the BMDS models and simulations.

MDA has a set of Unifying Missile Defense Functions (UMDFs), which increase the effectiveness of the BMD System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These UMDF efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). UMDFs are implemented across the BMDS elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.

The Test and Targets Program Element is grouped into three major areas: Test Functional Area and Test Execution; Targets and Countermeasures; and Concurrent Test, Training, and Operations (CTTO). Other test related program content involving Engineering Test Analysis, Facilities Siting, and Environmental Management, and Fielding and Integration is also included within this Program Element.

BMDS Test Program Functions:

- The Directorate for Test centralizes authority, control, and responsibility for all BMDS testing.
- Plans tests according to BMDS and Element objectives.
- Provides test ranges, instrumentation, and infrastructure.
- Develops MDA test policy.
- Plans and executes BMDS ground and flight tests.
- Demonstrates integrated BMDS capability.
- Addresses critical measurements for growth and capability.
- Collects data for BMDS analysis and manages MDA data centers.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	
<p>Provides documentation of BMDS and Element performance results for use by MDA, the OTAs, the Combatant Commander`s, OSD, Director, Operational Test & Evaluation (DOT&E), and senior decision makers. Provides data and information to anchor the models and simulations used to verify BMDS capabilities and to support BMDS characterization and assessment.</p> <p>Test and Evaluation Contribution to the BMDS:</p> <p>Plan and conduct testing of the BMDS CECs and EMEs** developed by Systems Engineering. Collect and provide test data in order to support the effectiveness, suitability, survivability, and interoperability assessments of the BMDS. Provide infrastructure and environmental compliance necessary to support increasingly complex tests. Provide risk reduction for the BMDS through flight testing to include technology demonstration, algorithm and model validation, and threat characterization. Develop Missile Defense Agency (MDA) BMDS testing policy with common, repeatable processes.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p>Major Test and Evaluation Goals:</p> <p>Form one BMDS test team that is accountable to the MDA Director and Element program directors. Provide leadership and guidance for the planning, execution, analysis, and reporting of BMD system test events to support system verification. Provide leadership and guidance under for planning, execution, analysis, and reporting of BMD system test events to support system verification. Establish single BMD system test processes that reflect the best practices of existing Element processes. Benchmark and merge existing Elements and executing processes into BMDS processes. Develop Element Lessons Learned and Best Practices to support single BMDS test design processes. Provide required infrastructure and environmental compliance for robust BMD system testing. Ensure test readiness, realism, and accuracy and improve the quality of execution in test programs.</p> <p>BMDS Targets and Countermeasures Program:</p>		

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>
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The BMDS Targets and Countermeasures program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program develops, acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions, with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for Targets and Countermeasures supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing Government Furnished Equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

Target Test Execution:

The Target Test Execution functional group provides expertise and consistency in target mission operations, target test designs, and cryptographic management to support effective orchestration and synchronization of the BMDS test program. The Target Test Execution Functional Group consists of Target Launch Operations, Test Engineering and COMSEC management functions. The Test Engineering function synchronizes test activities across target programs and Ballistic Missile Defense System elements. The Test Engineers conduct long range target test planning activities and provide target subject matter experts to Ballistic Missile Defense System test planning activities. The Target Launch Operations group conducts target mission planning, coordinates target range and mission requirements through the Universal Documentation System (UDS) and provides target technical information to the Missile Defense Agency`s General Council to support treaty approvals. The Target Launch Operations Group is the primary link between the target developer and the Ballistic Missile Defense System test community, incorporating target system constraints into the BMDS mission countdown and launch constraints. The Target COMSEC engineers coordinate with target program managers to obtain National Security Agency approvals for target encryption designs and coordinates with MDA Security Operations to obtain authority to operate.

BMDS Targets and Countermeasures Functions:

The Targets and Countermeasures program office centralizes authority, control, and responsibility in executing the development, procurement, and use of targets to support testing of the BMDS. Provides threat representative targets for the BMDS to verify models and simulations, as well as to verify BMDS performance across a broad range of operational conditions.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>
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Targets and Countermeasures Contribution to the BMDS:

Provides the BMDS with multiple targets (3 types) across four target classes: Short Range Ballistic Missiles (SRBM), Medium Range Ballistic Missiles (MRBM), Intermediate Range Ballistic Missiles (IRBM), and Intercontinental Ballistic Missiles (ICBM).

Type 1 Targets are simple, baseline configurations

Type 2 Targets have increased capability or complexity

Type 3 Targets are one of a kind design/development or launch activity

Provides the BMDS risk reduction through measurements of flight testing to include technology demonstration algorithms, model validation, and threat and countermeasures characterization.

Collects and provides test data in order to support effectiveness, suitability, and interoperability assessments.

Major Targets and Countermeasures Goals:

Provides MDA cost effective, threat representative all up round targets, missions planning, BMDS modeling and simulation, and execution and launch services.

Concurrent Test, Training and Operations (CTTO)

The Ballistic Missile Defense System (BMDS) Concurrent Test, Training, and Operations (CTTO) provides comprehensive, in-place, geographically dispersed upgrades, testing, training, and sustainment while maintaining operational readiness across the complete Ballistic Missile Defense System (BMDS) Enterprise. This CTTO capability will enable simultaneous cross-element training events in the field during BMDS incremental and spiral development testing and sustained operational readiness conditions without degrading protection capability. The BMDS CTTO capability is required in the JFCC-IMD Modifications Requirement List (MRL).

Concurrent Test, Training and Operations Functions:

Increase confidence in the BMDS through rigorous concurrent test, training, and operations.

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Enable BMDS testing and training in the field without degrading protection capability.
Sustain Combatant Commanders BMDS operations while simultaneously supporting concurrent BMDS systems development and acquisition to defend the United States, its deployed forces, friends, and allies.
Safely inject consistent high fidelity test and evaluation threat data on operational equipment to exercise all phases of the kill chain using all sensor/shooter combinations.
Aid in Aegis Ballistic Missile Defense, THAAD, Ground-based Midcourse Defense, sensors and fire control standardization evaluation and certification for all BMDS personnel and ensures all crews are highly qualified to perform their mission-specific tasks by conducting exercises and wargames executed from actual equipment and networked configurations.

Concurrent Test, Training, and Operations Contribution to the BMDS:

Enables BMDS sustained operational capability and continued BMDS incremental and spiral development while providing Warfighters the ability to maintain an operational capability, participate in exercises, train, and mission rehearse.
Provides comprehensive, in-place, geographically dispersed test, evaluation and training of the complete BMDS.
Ensures horizontal and vertical test and evaluation scalability from Element through Global BMDS.
Safely injects consistent high fidelity threat and scenario data on operational equipment to exercise all phases of the kill chain using all sensor/shooter combinations.
Strategic end-state: BMDS available on-demand for test and evaluation, training, and operations that is transparent to real world operations.

Major Concurrent Test, Training and Operations Goals:

Develop and implement requirements, plan for and adequately resource through the Agency planning and budgeting process, for the capabilities necessary to achieve a CTTO capability for the BMDS.
Increase Warfighter confidence in the BMDS.
Enable BMDS testing and training in the field without degrading protection capability.
Sustain BMDS operations while simultaneously supporting concurrent BMDS systems development and acquisition without degrading protection capability.
Ensure horizontal and vertical CTTO scalability from MDA Element through global BMDS.
Safely inject consistent high fidelity threat and scenario data on operational equipment to exercise all phases of the kill chain using all sensor and shooter combinations.
Support the development and evaluation of Warfighter Tactics, Techniques, and Procedures at the BMDS level.

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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	911.710	966.752	0.000	0.000	0.000
Current President's Budget	906.952	823.333	1,113.425	0.000	1,113.425
Total Adjustments	-4.758	-143.419	1,113.425	0.000	1,113.425
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-143.419			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	8.945	0.000			
• SBIR/STTR Transfer	-13.703	0.000			
• Other Adjustment Detail	0.000	0.000	1,113.425	0.000	1,113.425

Change Summary Explanation

FY 2009 decrease driven by SBIR/STTR transfer of budget out of the Test and Targets PE.

No FY 2011 data provided in PB10.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT AX04: <i>Test & Evaluation Block 1.0</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
AX04: <i>Test & Evaluation Block 1.0</i>	6.934	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	6.934
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project AX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Test and Evaluation (T&E) program has six primary purposes: 1) demonstrate and assess Ballistic Missile Defense System (BMDS); 2) demonstrate and assess Block capability; 3) identify areas where technology can increase overall system performance; 4) identify BMDS issues; 5) provide anchoring and validation data for modeling and simulation (M&S) tools; and 6) support early, partial, and full capability readiness decisions.

The Missile Defense Agency (MDA) recently initiated a systematic review of BMDS testing that will establish a new convention for setting test objectives that go beyond simply exercising newly delivered elements of the system. The BMDS Test Program in MDA is transitioning from ``architecture-based`` test objectives to ``technical parameter-based`` objectives to anchor models and simulations (M&S). The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all combinations of BMDS configurations, engagement.

The BMDS test program: (1) encompasses activities associated with technology developments, demonstrations, experiments, research, deployment, and maintenance activities, (2) describes test methods and approaches the Directorate for Test (DT) uses to test element capabilities to meet the system capabilities delineated in the System Specification Documents and Interface Design Documents, and (3) provides test data to support assessments to document and determine BMDS effectiveness. BMDS testing addresses system wide test objectives, Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) to anchor M&S test environments, testing methodologies (i.e., M&S, Flight Test (FT), Ground Test (GT)), and identifies test resources (e.g., Test Bed, M&S tools, targets, ranges) required to provide test data that when combined with analysis of data from multiple sources, contribute to verification of the BMDS capability.

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Block 1.0 defends the U.S. from Limited North Korean long range threat. The integrated GTs and FTs are planned to provide the necessary data to demonstrate capability deliveries and BMDS capabilities. Block 1.0 is Ground-Based Midcourse Defense centric, focusing on integrating sensors, C2BMC, and other Elements. Sufficient data should be collected to ensure completion of the BMDS Block 1.0 test program in FY09.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test Analysis and Reporting See Description Below <i>FY 2009 Accomplishments:</i> Provided system mission management and test execution of BMDS system level test events: FTG-05, GTX-03x and FTG-05 SPFR. ; <i>FY 2010 Plans:</i> N/A <i>FY 2011 Base Plans:</i> N/A <i>FY 2011 OCO Plans:</i> NA	6.934	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	6.934	0.000	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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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>											
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Test & Evaluation Block 1.0 BMDS Flight Test AX04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB	8.269	0.000		0.000		0.000		0.000	0	8.269	Continuing

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

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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			
		AL, NM, MA, HI & CA											
Test & Evaluation Block 1.0 BMDS Ground Test AX04	Various/ Various	MDIOC, Various CO, CA, AL, VA & MA	19.244	0.000		0.000		0.000		0.000	0	19.244	Continuing
Test & Evaluation Block 1.0 Test Analysis and Reporting AX04	Various/ Various	CTF TA&R Huntsville, AL	10.940	0.000		0.000		0.000		0.000	0	10.940	Continuing
Subtotal			38.453	0.000		0.000		0.000		0.000	0.000	38.453	

Remarks

NA

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

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

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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
Project Cost Totals	38.453	0.000	0.000	0.000	0.000	0.000	38.453	

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency **DATE:** February 2010

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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
FTG-05 (GMD Intercept Flight Test)	■																											
GTD-03 (Full BMDS Distributed Test)		■																										
FTG-05 SPFR (GMD System Post Flight Reconstruction)				■																								
GTX-03e (BMDS Strategic Focused HWIL Test)				■																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT AX04: <i>Test & Evaluation Block 1.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
FTG-05 (GMD Intercept Flight Test)	1	2009	1	2009
GTD-03 (Full BMDS Distributed Test)	2	2009	2	2009
FTG-05 SPFR (GMD System Post Flight Reconstruction)	4	2009	4	2009
GTX-03e (BMDS Strategic Focused HWIL Test)	4	2009	4	2009

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</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
EX05: <i>Targets & Countermeasures Supports Block 5.0</i>	40.393	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	40.393
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2009 EX05 funding transitioned to the Targets and Countermeasures Program Element.

Starting in FY 2010 EX05 funding transitioned to YX05 project.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Targets and Countermeasures Supports Block 5.0 See Description Below	40.393	0.000	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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></p> <p>Funding for this effort supports flight tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Completed target hardware build and integration for the following target types</p> <p>1 Aegis Readiness Assessment Vehicle (ARAV-A) 2 Aegis Readiness Assessment Vehicles (ARAV-B) Conducted mission planning and range coordination activity, executed target mission, and collected and analyzed target system data for 1 missions:</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FTX-06 Event 1 Initiated and/or continued target hardware development, target integration, mission planning, and range coordination for future missions of the following target types: 1 Launch Vehicle (LV-2) 2 Aegis Readiness Assessment Vehicles (ARAV-C) 1 Medium Range Target (MRT) Provided Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	40.393	0.000	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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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 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>
• 0603906C: <i>REGARDING TRENCH</i>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).

In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3 Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
<p>Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.</p> <p>Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.</p> <p>As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.</p> <p>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.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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			
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 1 EX05	C/CPAF	Lockheed Martin Denver, CO	3.751	0.000		0.000		0.000		0.000	0	3.751	Continuing
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 2 EX05	TBD/TBD	Naval Surface Warfare Center, Port Hueneme, CA White Sands, NM	14.672	0.000		0.000		0.000		0.000	0	14.672	Continuing
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 3 EX05	TBD/TBD	Sandia National Labs Albuquerque, NM	5.892	0.000		0.000		0.000		0.000	0	5.892	Continuing
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 4 EX05	TBD/TBD	Defense Finance and Accounting Service Indianapolis, IN	3.941	0.000		0.000		0.000		0.000	0	3.941	Continuing
	C/CPAF	Orbital Science	6.000	0.000		0.000		0.000		0.000	0	6.000	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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			
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 5 EX05		Chandler, AZ											
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 6 EX05	C/FFP	Northrop Grumman Space Systems Albuquerque, NM	0.114	0.000		0.000		0.000		0.000	0	0.114	Continuing
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 7 EX05	TBD/TBD	Naval Surface Warfare Center Crane, IN	0.008	0.000		0.000		0.000		0.000	0	0.008	Continuing
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 8 EX05	TBD/TBD	Aerospace Corporation Los Angeles, CA	0.270	0.000		0.000		0.000		0.000	0	0.270	Continuing
	TBD/TBD		2.043	0.000		0.000		0.000		0.000	0	2.043	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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			
Targets and Countermeasures Supports Block 5.0 Targets and Countermeasures Supports Block 5.0 - 9 EX05		United States Army Kwajalein Atoll											
Subtotal			36.691	0.000		0.000		0.000		0.000	0.000	36.691	

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX05: <i>Targets & Countermeasures Supports Block 5.0</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	36.691	0.000		0.000		0.000		0.000	0.000	36.691	

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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</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
BX04: <i>Test & Evaluation Block 2.0</i>	32.989	0.792	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	33.781
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project BX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) T&E program has six primary purposes: 1) demonstrate and assess Ballistic Missile Defense System (BMDS); 2) demonstrate and assess Block capability; 3) identify areas where technology can increase overall system performance; 4) identify BMDS issues; 5) provide anchoring and validation data for modeling and simulation (M&S) tools; and 6) support early, partial, and full capability readiness decisions.

The Missile Defense Agency (MDA) recently initiated a systematic review of BMDS testing that will establish a new convention for setting test objectives that go beyond simply exercising newly delivered elements of the system. The BMDS test Program is MDA is transitioning from ``architecture-based`` test objectives to ``technical parameter-based`` objectives to anchor models and simulations (M&S). The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all combinations of BMDS configurations, engagement.

The BMDS test program: (1) encompasses activities associated with technology developments, demonstrations, experiments, research, deployment, and maintenance activities, (2) describes test methods and approaches the Directorate for Test (DT) uses to test element capabilities to meet the system capabilities delineated in the System Specification Documents and Interface Design Documents, and (3) provides test data to support assessments to document and determine BMDS effectiveness. BMDS testing addresses system wide test objectives, Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) to anchor M&S, test environments, testing methodologies (i.e., M&S, FT, GT), and identifies test resources (e.g., Test Bed, M&S tools, targets, ranges) required to provide test data that when combined with analysis of data from multiple sources, contribute to verification of the BMDS capability.

Engineering Test Analysis (formerly part of the CTF) conducts system level analysis for all BMD system flight and ground test events and reports the results to MDA Leadership and the BMDS Community. Analysis is performed and reported using the Joint Analysis Team (JAT) process where system analysts and analysts from

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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each participating element work together to plan analysis requirements and analyze test results. Comprehensive joint analysis produces cohesive system-level analysis, reduces flight test risk, and identifies operational capabilities and limitations through the use of standardized processes, tools, and products across all test venues. This analysis enables MDA Leadership to make capability delivery declarations to support Warfighter requirements.

Block 2.0 defends allies and deployed forces from short- to medium-range threats in one region/theater. Initial Block 2.0 events test maturing BMDS Elements, including PATRIOT, Aegis BMD (SM-3), and THAAD. Events are identified to address the demonstration of PATRIOT Upper Tier Debris Mitigation capability and Aegis Weapon System SM-2 Block IV Sea-Based Terminal capability. Once baselined, Block 2.0 testing increases the number of concurrent participants across Elements, demonstrating operationally realistic multi-national communications networks, performing directed engagements and engagement coordination among all participants, and assessing increased capability with respect to BMDS measure of effectiveness (MOE). International partners include but are not limited to Japan, Israel, and other potential future BMD International Partners. Block 2.0 lays the ground work upon which Block 5.0 will continue to evolve additional capability for allies and deployed forces.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test & Evaluation Block 2.0 See Description Below <i>FY 2009 Accomplishments:</i> Provided system mission management and test execution of BMDS system level test events: JFTM-02, Pacific Blitz, Stellar Daggers, FTM-17 and FTT-10A. Executed International test Caravan-2 (USFT-3). Conducted Ground Test detailed test planning for FTT-10A Phase 5 (SPFR) and executed the test. Conducted planning for BMDS system level test events FTT-11, FTT-12 and JFTM-03. Initiated and conducted planning for FY10 BMDS system level test events. Supported BMDS Elements in planning and execution of their program specific GTs and FTs. Supported Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refined scenario designs to support CECs and EMEs**.	32.989	0.792	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Developed, integrated, and tested Single Stimulation Framework (SSF) to provide a single event test driver for the BMDS HWIL/Distributed tests events.</p> <p>Provided system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies.</p> <p>Developed and facilitated requirements and implementation of virtual TA&R nodes enabling distributed, collaborative analysis across all block nodes.</p> <p>Developed, integrated, tested, trained, deployed, and operated spiral releases of software tools.</p> <p>Planned, scheduled, and facilitated the integration of BMDS analysis activities within joint venues.</p> <p>Developed and delivered products for JAT, data management, data processing, truth data, and analysis as identified above.</p> <p>Performed system-level analysis and interoperability analysis for GTX-03c, GTD-03, FTT-10a, Fast Shield II, GTX-03e, Caravan 2 USFT-3, and JDIE-08.</p> <p>Developed Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for GTX-03c, GTD-03, FTT-10a, Fast Shield II, GTX-03e, Caravan 2 USFT-3, FTT-11 (AEP only), and JDIE-08 (AEP only).</p> <p>Lead Joint Analysis Teams (JAT) for GTX-03c, GTD-03, FTT-10a, Fast Shield II, GTX-03e, and Caravan 2 USFT-3.</p> <p>Developed, delivered, and briefed QLB/EQLB, MDR/EMDR for GTX-03c, GTD-03, FTT-10a, Fast Shield II, GTX-03e, Caravan 2 USFT-3, and JDIE-08 (no QLB/EQLB).</p> <p>Incorporated software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability.</p> <p>Continued to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p> </p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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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 2010 Plans:</i> Complete detailed test planning and execute FY10 BMDS system level test events listed in the IMTP and depicted in R-4 schedule profile. Support MDA System Engineering and Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refine scenario designs for BMDS FTs to support CECs and EMEs** identified in BMDS IMTP. Provide system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies. Complete Phase 1 Hardware/Software Benchmark testing, support Ground Test Integration of SSF, and integrate hardware into SSF Development Lab. Develop, integrate, test, train, deploy, and operate spiral releases of software tools. Plan, schedule, and facilitate the integration of BMDS analysis activities within joint venues. Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP. Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP. Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP. Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP. Incorporate software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability. Continue to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 Base Plans:</i> NA</p>						

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	32.989	0.792	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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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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>											
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Test & Evaluation Block 2.0 BMDS Flight Test BX04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB	21.371	0.792	Oct 2009	0.000		0.000		0.000	0	22.163	Continuing

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

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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			
		AL, NM, MA, HI & CA											
Test & Evaluation Block 2.0 BMDS Ground Test BX04	Various/ Various	MDIOC, Various CO, CA, AL, VA & MA	28.186	0.000		0.000		0.000		0.000	0	28.186	Continuing
Test & Evaluation Block 2.0 Test Analysis and Reporting BX04	Various/ Various	CTF TA&R Huntsville, AL	17.519	0.000	Oct 2009	0.000		0.000		0.000	0	17.519	Continuing
Subtotal			67.076	0.792		0.000		0.000		0.000	0.000	67.868	

Remarks

NA

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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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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
Project Cost Totals	67.076	0.792	0.000	0.000	0.000	0.000	67.868	

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
GTX-03c (Full BMDS Distributed Test)	■																											
GTD-03 (Full BMDS Distributed Test)		■																										
JFTM-02 E1, E2 (Japanese Cooperative Aegis Track Ex/US Sim Engagement)	■																											
FTT-10a (THAAD Operational Intercept Flight Test)		■																										
JDIE-08 (EIT #2) (Arrow HWIL Ground Test - Israeli Cooperative Program)			■																									
FTT-11 (THAAD Intercept Flight Test)				■																								
Caravan 2 USFT 3 (Israeli Program Intercept Flight Test)				■																								
FTT-12 (THAAD Intercept Flight Test)							■																					
JFTM-03 E1, E2 (Japanese Cooperative Aegis Track Ex/US Sim Engagement)				■																								
Caravan 2 USFT 4 (Israeli Program Intercept Flight Test)								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX04: <i>Test & Evaluation Block 2.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
GTX-03c (Full BMDS Distributed Test)	1	2009	1	2009
GTD-03 (Full BMDS Distributed Test)	2	2009	2	2009
JFTM-02 E1, E2 (Japanese Cooperative Aegis Track Ex/US Sim Engagement)	1	2009	1	2009
FTT-10a (THAAD Operational Intercept Flight Test)	2	2009	2	2009
JDIE-08 (EIT #2) (Arrow HWIL Ground Test - Israeli Cooperative Program)	3	2009	3	2009
FTT-11 (THAAD Intercept Flight Test)	1	2010	1	2010
Caravan 2 USFT 3 (Israeli Program Intercept Flight Test)	4	2009	4	2009
FTT-12 (THAAD Intercept Flight Test)	2	2010	2	2010
JFTM-03 E1, E2 (Japanese Cooperative Aegis Track Ex/US Sim Engagement)	1	2010	1	2010
Caravan 2 USFT 4 (Israeli Program Intercept Flight Test)	3	2010	3	2010

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</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
CX04: <i>Test & Evaluation Block 3.0</i>	32.370	4.633	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	37.003
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project CX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) T&E program has six primary purposes: 1) demonstrate and assess Ballistic Missile Defense System (BMDS); 2) demonstrate and assess Block capability; 3) identify areas where technology can increase overall system performance; 4) identify BMDS issues; 5) provide anchoring and validation data for modeling and simulation (M&S) tools; and 6) support early, partial, and full capability readiness decisions.

The Missile Defense Agency (MDA) recently initiated a systematic review of BMDS testing that will establish a new convention for setting test objectives that go beyond simply exercising newly delivered elements of the system. The BMDS test Program is MDA is transitioning from ``architecture-based`` test objectives to ``technical parameter-based`` objectives to anchor models and simulations (M&S). The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all combinations of BMDS configurations, engagement.

The BMDS test program: (1) encompasses activities associated with technology developments, demonstrations, experiments, research, deployment, and maintenance activities, (2) describes test methods and approaches the Directorate for Test (DT) uses to test element capabilities to meet the system capabilities delineated in the System Specification Documents and Interface Design Documents, and (3) provides test data to support assessments to document and determine BMDS effectiveness. BMDS testing addresses system wide test objectives, Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) to anchor M&S test environments, testing methodologies (i.e., M&S, flight tests (FT), ground tests (GT)), and identifies test resources (e.g., Test Bed, M&S tools, targets, ranges) required to provide test data that when combined with analysis of data from multiple sources, contribute to verification of the BMDS capability.

Engineering Test Analysis (formerly part of the CTF) conducts system level analysis for all BMD system flight and ground test events and reports the results to MDA Leadership and the BMDS Community. Analysis is performed and reported using the Joint Analysis Team (JAT) process where system analysts and analysts from

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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each participating element work together to plan analysis requirements and analyze test results. Comprehensive joint analysis produces cohesive system-level analysis, reduces flight test risk, and identifies operational capabilities and limitations through the use of standardized processes, tools, and products across all test venues. This analysis enables MDA Leadership to make capability delivery declarations to support Warfighter requirements.

Block 3.0 expands defense of the U.S. to include limited Iranian long-range threats. Block 3.0 testing will occur in GT campaign GT-09 with the HWIL demonstrations of both Fylingdales and Thule. A sensor characterization test, using a foreign cooperative target will occur late in FY09.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test & Evaluation Block 3.0 See Description Below <i>FY 2009 Accomplishments:</i> Provided system mission management and test execution of BMDS system level test events: FTG-05. Completed early planning for other FY10 BMDS test events: BVT-01, FTM-17 (Stellar Avenger), FTG-06. Completed BVT-01 Test Planning Review and preparations for Executive Test Planning Review (ETPR). Conducted initial preparations for FTG-06 Test Planning Review and ETPR. Conducted GTD-03 and GTX-03e. Initiated and conducted planning for FY 2010 BMDS system level test events. Supported BMDS Elements in planning and execution of their program specific GTs and FTs. Supported Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refined scenario designs to support CECs and EMEs**. Developed, integrated, and tested Single Stimulation Framework (SSF) to provide a single event test driver for the BMDS HWIL/Distributed tests events. Provided system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies.	32.370	4.633	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Performed pre-mission system-level analysis and interoperability analysis for FTG-06. Developed Analysis Execution Plan (AEP) for FTG-06. Lead Joint Analysis Team (JAT) for FTG-06. Incorporated software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models an simulations.</p> <p><i>FY 2010 Plans:</i> Complete detailed test planning and execute other FY10 BMDS system level test events listed in the IMTP and depicted in R-4 schedule profile. Support BMDS Elements in planning and execution of their program specific FTs. Support MDA System Engineering and Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refine scenario designs for BMDS FTs to support CECs and EMEs** identified in BMDS IMTP. Provide system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies. Complete Phase 1 Hardware/Software Benchmark testing, support Ground Test Integration of SSF, and integrate hardware into SSF Development Lab. Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP. Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP. Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP. Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP. Incorporate software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability.</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Continue to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.					
** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.					
<i>FY 2011 Base Plans:</i> N/A					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	32.370	4.633	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
	308.869	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	308.869

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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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 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>
• 0603886C: <i>Ballistic Missile Defense System Interceptor</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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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>
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>											
• 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
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Test & Evaluation Block 3.0 BMDS Flight Test CX04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB	22.264	0.199	Oct 2009	0.000		0.000		0.000	0	22.463	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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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			
		AL, NM, MA, HI & CA											
Test & Evaluation Block 3.0 BMDS Ground Test CX04	Various/ Various	MDIOC, Various CO, CA, AL, VA & MA	18.625	3.559	Oct 2009	0.000		0.000		0.000	0	22.184	Continuing
Test & Evaluation Block 3.0 Test Analysis and Reporting CX04	Various/ Various	CTF TA&R Huntsville, AL	13.765	0.000	Oct 2009	0.000		0.000		0.000	0	13.765	Continuing
Test & Evaluation Block 3.0 Systems Engineering CX04	Various/ Various	-	0.000	0.875	Oct 2009	0.000		0.000		0.000	0	0.875	Continuing
Subtotal			54.654	4.633		0.000		0.000		0.000	0.000	59.287	

Remarks

NA

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

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

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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
Project Cost Totals	54.654	4.633	0.000	0.000	0.000	0.000	59.287	

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
FTG-05 (GMD Intercept Flight Test)	■																															
FTG-06 (GMD Intercept Flight Test)							■																									
FTX-07 (GT-200) (Aegis Glory Trip TOO)							■																									
FTX-08 (GT-201) (ABL Glory Trip TOO)								■																								
FTX-09 (GT-202) (ABL Glory Trip TOO)												■																				
FTX-11 (GT-203) (Aegis Glory Trip TOO)																■																
Fast Shield II (Warfighter Contingency Ground Test)				■																												
GTD-03 (Full BMDS Distributed Test)			■																													
GTX-03e (BMDS Strategic Focused HWIL Test)				■																												
GTX-04a (Regional Focused HWIL Test)							■																									
GTX-04b (Full BMDS HWIL Test)								■																								
GTX-04c (Full BMDS Distributed Test)												■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX04: <i>Test & Evaluation Block 3.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
FTG-05 (GMD Intercept Flight Test)	1	2009	1	2009
FTG-06 (GMD Intercept Flight Test)	2	2010	2	2010
FTX-07 (GT-200) (Aegis Glory Trip TOO)	1	2010	1	2010
FTX-08 (GT-201) (ABL Glory Trip TOO)	3	2010	3	2010
FTX-09 (GT-202) (ABL Glory Trip TOO)	4	2010	4	2010
FTX-11 (GT-203) (Aegis Glory Trip TOO)	1	2011	1	2011
Fast Shield II (Warfighter Contingency Ground Test)	3	2009	3	2009
GTD-03 (Full BMDS Distributed Test)	2	2009	2	2009
GTX-03e (BMDS Strategic Focused HWIL Test)	4	2009	4	2009
GTX-04a (Regional Focused HWIL Test)	1	2010	1	2010
GTX-04b (Full BMDS HWIL Test)	2	2010	2	2010
GTX-04c (Full BMDS Distributed Test)	4	2010	4	2010

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				PROJECT EX04: <i>Test & Evaluation Block 5.0</i>			
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
EX04: <i>Test & Evaluation Block 5.0</i>	20.274	8.784	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	29.058
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project EX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Test and Evaluation (T&E) program has six primary purposes: 1) demonstrate and assess Ballistic Missile Defense System (BMDS); 2) demonstrate and assess Block capability; 3) identify areas where technology can increase overall system performance; 4) identify BMDS issues; 5) provide anchoring and validation data for modeling and simulation (M&S) tools; and 6) support early, partial, and full capability readiness decisions.

The Missile Defense Agency (MDA) recently initiated a systematic review of BMDS testing that will establish a new convention for setting test objectives that go beyond simply exercising newly delivered elements of the system. The BMDS test Program is MDA is transitioning from ``architecture-based`` test objectives to ``technical parameter-based`` objectives to anchor models and simulations (M&S). The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all combinations of BMDS configurations, engagement.

The BMDS test program: (1) encompasses activities associated with technology developments, demonstrations, experiments, research, deployment, and maintenance activities, (2) describes test methods and approaches the Directorate for Test (DT) uses to test element capabilities to meet the system capabilities delineated in the System Specification Documents and Interface Design Documents, and (3) provides test data to support assessments to document and determine BMDS effectiveness. BMDS testing addresses system wide test objectives, Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) to anchor M&S test environments, testing methodologies (i.e., M&S, Flight Tests (FT), Ground Tests (GT)), and identifies test resources (e.g., Test Bed, M&S tools, targets, ranges) required to provide test data that when combined with analysis of data from multiple sources, contribute to verification of the BMDS capability.

Engineering Test Analysis (formerly part of the CTF) conducts system level analysis for all BMD system flight and ground test events and reports the results to MDA Leadership and the BMDS Community. Analysis is performed and reported using the Joint Analysis Team (JAT) process where system analysts and analysts from

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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each participating element work together to plan analysis requirements and analyze test results. Comprehensive joint analysis produces cohesive system-level analysis, reduces flight test risk, and identifies operational capabilities and limitations through the use of standardized processes, tools, and products across all test venues. This analysis enables MDA Leadership to make capability delivery declarations to support Warfighter requirements.

Block 5.0 fielding and development efforts are directed toward expanding defense of allies and deployed forces from short-to-intermediate range threats in two regions/theaters. The DT supports the developmental and integration efforts through test and assessment of , CECs and EMEs** attributed to Block 5.0.

** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test & Evaluation Block 5.0 See Description Below <i>FY 2009 Accomplishments:</i> Executed GTD-03, GTX-03c, GTX-03e, GTF-03b (FTX-03 System Post Flight Reconstruction (SPFR)) and FTG-05 SPFR/Phase 5 Executed real world test support events: Fast Shield II, Fast CAAT-East A (Distributed) and B (HWIL and Distributed). Completed detailed test planning for other upcoming FY09 BMDS missions: FTX-06(E1). Completed early planning for other FY10 BMDS test events: FTX-07, FTX-06(E2, E3, E4). Initiated and conducted planning for FY10 and FY11 BMDS system level test events. Supported BMDS Elements in planning and execution of their program specific GTs and FTs. Supported Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refined scenario designs to support CECs and EMEs**.	20.274	8.784	0.000	0.000	0.000
Developed, integrated, and tested Single Stimulation Framework (SSF) to provide a single event test driver for the BMDS HWIL/Distributed tests events.					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Provided system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies. Lead Joint Analysis Team (JAT) for FTM-15. Incorporated software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability. Continued to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2010 Plans:</i> Complete detailed test planning and execute other FY10 BMDS test events: FTX-07, FTX-06(E2, E3, E4) Conduct/execute System Ground Test Activities for FY10, GTX-04a, GTX-04b, GTX-04c, FCE-C HWIL/Distributed, Real World events, and identified SPFRs/SPMT for flight test. Complete detailed test planning and execute FY10 BMDS system level and other test events. Support BMDS Elements in planning and execution of their program specific FTs. Support MDA System Engineering and Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refine scenario designs for BMDS FTs to support CECs and EMEs** identified in BMDS IMTP. Provide system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies. Complete Phase 1 Hardware/Software Benchmark testing, support Ground Test Integration of SSF, and integrate hardware into SSF Development Lab. Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP. Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP.</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP. Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP. Incorporate software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	20.274	8.784	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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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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>
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>											
• 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
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	EX04: <i>Test & Evaluation Block 5.0</i>

executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Test & Evaluation Block 5.0 BMDS Flight Test EX04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB	2.380	0.625	Oct 2009	0.000		0.000		0.000	0	3.005	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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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			
		AL, NM, MA, HI & CA											
Test & Evaluation Block 5.0 BMDS Ground Test EX04	Various/ Various	MDIOC, Various CO, CA, AL, VA & MA	24.435	8.159	Oct 2009	0.000		0.000		0.000	0	32.594	Continuing
Test & Evaluation Block 5.0 Test Analysis and Reporting EX04	Various/ Various	CTF TA&R Huntsville, AL	1.262	0.000	Oct 2009	0.000		0.000		0.000	0	1.262	Continuing
Subtotal			28.077	8.784		0.000		0.000		0.000	0.000	36.861	

Remarks
NA

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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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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
Project Cost Totals	28.077	8.784	0.000	0.000	0.000	0.000	36.861	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
GTX-04a (Regional Focused HWIL Test)				■																								
FTX-06 E2, E3, E4 (Aegis Simulated Intercept Flight Test)				■																								
FCE-C Distributed (Regional Distributed Contingency Test)				■																								
FCE-C HWIL (Regional HWIL Contingency Test)				■																								
FTM-17 (Aegis Track Ex Risk Reduction for JFTM-03)			■																									
FTX-06 E1 (Aegis Track Ex)			■																									
FTX-07 (GT-200) (Aegis Glory Trip TOO)					■																							
GTX-04b (Full BMDS HWIL Test)					■																							
GTX-04c (Full BMDS Distributed Test)								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT EX04: <i>Test & Evaluation Block 5.0</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
GTX-04a (Regional Focused HWIL Test)	1	2010	1	2010
FTX-06 E2, E3, E4 (Aegis Simulated Intercept Flight Test)	1	2010	1	2010
FCE-C Distributed (Regional Distributed Contingency Test)	1	2010	1	2010
FCE-C HWIL (Regional HWIL Contingency Test)	1	2010	1	2010
FTM-17 (Aegis Track Ex Risk Reduction for JFTM-03)	4	2009	4	2009
FTX-06 E1 (Aegis Track Ex)	4	2009	4	2009
FTX-07 (GT-200) (Aegis Glory Trip TOO)	2	2010	2	2010
GTX-04b (Full BMDS HWIL Test)	2	2010	2	2010
GTX-04c (Full BMDS Distributed Test)	4	2010	4	2010

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				WX04: <i>Test & Evaluation Capability Development</i>				
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
WX04: <i>Test & Evaluation Capability Development</i>	18.509	71.461	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	89.970
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project WX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Test and Evaluation (T&E) program has six primary purposes: 1) collect data to demonstrate and assess the Ballistic Missile Defense System (BMDS); 2) collect data to demonstrate and assess the block capability; 3) identify areas where technology can increase system performance; 4) identify BMDS issues; 5) provide anchoring and validation data for modeling and simulation (M&S) tools; and 6) support early, partial, and full capability readiness decisions.

The BMDS developmental and operational test program encompasses all T&E activities associated with technology developments, demonstrations, experiments, research, deployment, and maintenance activities. The T&E program describes test methods and approaches that the Directorate for Test uses to test element capabilities to meet the system-necessary capabilities delineated in the System Specification Documents and Interface Design Documents. The MDA T&E program provides test data to support assessments used to document and determine BMDS effectiveness.

T&E Capability Development funding supports detailed planning and execution of flight test events plus test analysis and reporting functions: Capability development provides funding for efforts which address technologies, functionalities and capabilities not mature enough for fielding under the Block Construct, are experimental in nature or do not support one of the five blocks. The Directorate for Test supports the developmental and integration efforts through test and assessment of Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) to anchor M&S. Funding provides manpower, range and logistics support for system Flight Test (FT) planning, integration, execution, data collection, and analysis and range and auxiliary sensor support. Funding supports overlaying system-level objectives onto element flight tests (FTs) where appropriate and non-element specific testing. Funding also support BMDS Flight Test Targets of Opportunity (TOO) and experimental flight tests to support Capability Development.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
<p>BMD System Flight Tests (FTs): Capability Development programs such as STSS, ABL, Arrow, KEI, etc. examine the capability of the BMDS to detect, track, and engage targets. More advanced tests are planned that will provide data to support verification of more complex CECs and EMEs. These projects will provide analysis of each system test event through the Joint Analysis Team (JAT). BMDS Flight Tests related to Capability Development include but are not limited to:</p> <p>Emerging Technologies: programs that develop technologies and test future capabilities; including programs such as STSS and ABL. Other programs that complement the BMDS such as Patriot are included. Certain technologies in early development and potential future capabilities such as Next Generation Sensor Producibility (NGSP) and Near Field Infrared Experiment (NFIRE) are tested in this program.</p> <p>Targets of Opportunity (TOO)s: Events (e.g., Minuteman FT, Air Force Space Command operations, or approved foreign launches) that afford the opportunity to exercise some portion of BMDS, conduct on-board and off-board experiments, and gather phenomenology data on representative objects and events. These events are categorized as domestic, foreign co-operative, or non-cooperative tests. TOOs support risk reduction through early identification of integration issues. Specifically, TOOs provide a cost-effective means of exercising and collecting data on component interfaces in real-time; exercising communication links and connectivity, real-time element loading, timing, cueing, tracking capabilities, algorithm development, and test checklists for the Integrated Test Team.</p> <p>Critical Measurements and Counter Measures (CMCM) FTs: Events that provide a venue for risk reduction, addressing phenomenology (understanding the physics of what was observed and its effects on BMDS sensors), countermeasures and counter-countermeasures requirements, providing critical measurements to support development and validation of algorithms, M&S, discrimination, and new technology demonstrations. CMCM FTs augment various MDA and Elements test programs and ensure a coherent, complete, cost effective, and disciplined approach to collecting data/measurements to support characterization of the BMDS mission space (i.e., provide an understanding of how the BMDS visible, infrared and radar sensors perform when observing ballistic missile targets and countermeasures during flight).</p> <p>Engineering Test Analysis (formerly part of the CTF) conducts system level analysis for all BMD system flight and ground test events and reports the results to MDA Leadership and the BMDS Community. Analysis is performed and reported using the Joint Analysis Team (JAT) process where system analysts and analysts from each participating element work together to plan analysis requirements and analyze test results. Comprehensive joint analysis produces cohesive system-level analysis, reduces flight test risk, and identifies operational capabilities and limitations through the use of standardized processes, tools, and products across all test venues. This analysis enables MDA Leadership to make capability delivery declarations to support Warfighter requirements.</p> <p>Target certification assures that a target recommended for certification meets the mission and test objectives with the target characteristics identified for that test event. The Target Accreditation Report, the basis for certification, compares the target's capabilities against the capabilities required by the BMDS Target Requirements Document and the test event described in the IMTP (Integrated Master Test Plan).</p>		

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<p>The WX04 budget project also includes Modeling and Simulation efforts as detailed below.</p> <p>The mission of the Modeling and Simulation (M&S) program is to engineer and deliver validated, integrated simulation solutions for the primary uses of Ballistic Missile Defense System (BMDS) Performance Assessment and Ground Test, with additional capability to support BMDS-Element integration, missile defense Wargames and exercises (national and international), BMDS training, and BMDS concept analysis. In this role, M&S provides cost-effective and proactive tools to assess the fielded capabilities of the BMDS, analyze and foster accelerated integration of Element and component capability into the BMDS, and is a valuable training and planning tool for Warfighting Concept of Operations and missile defense planning.</p> <p>BMDS Digital Modeling and Simulation:</p> <p>BMDS Digital Modeling and Simulation produces and integrates digital M&S assets for use with the Digital Simulation Architecture to form system-level constructive simulations for full-envelope BMDS performance assessment with surrogate capability for BMDS ground tests. Digital M&S creates system-level stimulus for Element integration testing and system-level M&S capabilities which augment BMDS flight tests. Other mission areas include digital M&S capability for system-level concept definition and exploration; real-time, interactive system-level M&S capability to support Warfighter-in-the-loop Wargaming, training and exercises, and capabilities to support rapid, flexible scenario development and execution control.</p> <p>Verification, Validation, and Accreditation (VV&A): Accredited system-level models and simulations (M&S) anchored to real-world events, are required to perform an accurate and comprehensive assessment of the BMDS. The implementation and documentation system-level M&S verification, validation, and accreditation will establish credibility and increase confidence in the M&S that provides a cornerstone for the Agency's simulation-based acquisition approach. The individual MDA elements and components are responsible for conducting the VV&A of their own models and providing that evidence to system-level VV&A for each event. This includes benchmarking their M&S to higher fidelity simulations, anchoring to real world events, and planning and conducting post-flight reconstruction. Verifying, validating and, accrediting multiple MDA events to include Performance Assessment, Ground Tests which supports BMDS fielding decisions, and tier one Combatant Commanders (COCOM) exercises will be performed. Development and promulgation of system-level VV&A policies and standards, benchmarked against leading industry practices will be assessed. Providing model, simulation, and event credibility across Performance Assessment, Ground Tests, Element Integration, Wargames and Exercises, Training, will be conducted and all associated infrastructure that supports BMDS fielding decisions. Through the consistent practice of verifying model representations benchmarked to other higher-fidelity models, and anchored to operational tests, increase model confidence and acceptability by outside agencies like the Operational Test Agency will be achieved. The implementation of the Model-Test-Model process requires close collaboration with the test community, and the capability to predict system-level test results and perform post-flight test reconstruction in order to improve model confidence and future performance. Robust VV&A</p>		

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requires flexibility and capability to explore new BMDS concepts, and evaluate new Element representations to identify and correct flaws early in the development process. BMDS HWIL Modeling and Simulation:						
<p>BMDS HWIL Modeling and Simulation is responsible to provide and integrate the BMDS system-level HWIL stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs. BMDS HWIL provides development, integration, and test funding to both MDA and non-MDA Elements participating in the BMDS ground test campaigns. BMDS HWIL also provides the core Lethality and Phenomenology models for use in analysis of BMDS and Element mission requirements.</p>						
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test & Evaluation Capability Development See Description Below <i>FY 2009 Accomplishments:</i> Executed BMDS Target of Opportunity event GT-198. Executed International tests AST-13. Initiated planning for FY10 BMDS system level test events. Supported BMDS Elements in planning and execution of their program specific GTs and FTs. Conducted early planning for FY10 major BMDS system level test events. Supported Warfighter requirements, integration of multiple Elements, OTA and test support team into BMDS system flight and ground tests. Refined scenario designs to support CECs and EMEs**. Developed, integrated, and tested Single Stimulation Framework (SSF) to provide a single event test driver for the BMDS HWIL/Distributed tests events. Provided system-level range support, mission assurance, logistics support, test specific support personnel, test specific communication, support equipment, and permission analysis and studies. Performed system-level analysis and interoperability analysis for FCE-A, FCE-B, AST-13, and GT-199. Developed Analysis Execution Plans (AEP) for GT-198, FCE-A, FCE-B, AST-13, and GT-199.		17.876	2.164	0.000	0.000	0.000

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Developed Test Analysis Reports (TAR) for AST-13 and GT-199. Lead Joint Analysis Teams (JAT) for FCE-A, FCE-B, AST-13, and GT-199. Developed, delivered, and briefed QLB/EQLB, MDR/EMDR for FCE-A, FCE-B, and AST-13. Incorporated software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability. Continued to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2010 Plans:</i> Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP and depicted in R-4 schedule profile. Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP. Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP. Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP. Incorporate software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability. Continue to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p><i>FY 2011 Base Plans:</i> N/A</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 2011 OCO Plans:</i> NA</p>								
<p>Target Certification See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Target certification conducted. Certification assures that a target meets mission and test objectives with the proper target characteristics that were identified for a particular test event. Target Accreditation Reports were issued that compare the target’s capabilities against the capabilities required by the BMDS Target Requirements Document and the test event described in the IMTP (Integrated Master Test Plan).</p> <p><i>FY 2010 Plans:</i> Conduct Target Certification to ;assure that a target meets mission and test objectives with the proper target characteristics that were identified for a particular test event. Issue Target Accreditation Reports that compare the target’s capabilities against the capabilities required by the BMDS Target Requirements Document and the test event described in the IMTP (Integrated Master Test Plan).</p> <p><i>FY 2011 Base Plans:</i> N/A</p> <p><i>FY 2011 OCO Plans:</i> NA</p>				0.633	0.679	0.000	0.000	0.000
<p>Engineering Test Analysis See Description Below</p>				0.000	68.618	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> N/A</p> <p><i>FY 2010 Plans:</i> Maintain Missile Defense Space warning Tool (models validated space-borne assets of BMDS). Maintain Threat Modeling Simulation System. Provide software operations/maintenance of the BMD International Simulation. Review development requirements from international agreements & track resulting M&S developments. Perform foreign release review on M&S related documents, briefings, screen views and data. Provide integrated Verification, Validation, and Accreditation (VV&A) of MDA Models and Simulations (M&S) at the system-level for specific events to include Performance Assessment, Ground Tests that support BMDS fielding decisions, and tier one COCOM exercises. Conduct system-level V&V to include threat trajectory and signature V&V throughout the system; end-to-end environmental implementation is consistent and correct; communications and architecture behave properly; and interoperability is adequately addressed [Conduct system-level post flight reconstruction for validation of BMDS performance assessment M&S]. Work closely with Elements, Test Community, System Engineering, and OTA to ensure M&S for event meets intended uses and objectives, and has proper VV&A documentation and evidence to include benchmarking/anchoring pedigree. Develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for the GTI-04, GTD-04 ground tests. Conduct BMDS HWIL stimulation framework V&V for BMDS GTI-04 and GTD-04 ground tests. Define and plan for enhancements to the SSF required for execution of the GT05 campaign to include identification of interdependencies required for execution. Initiate planning to integrate SSF interface with the CD UEWR. Initiate planning to integrate SSF interface with the GMD Fielded assets.</p>						

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	18.509	71.461	0.000	0.000	0.000

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
• 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
• 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

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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The DT directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

The M&S acquisition strategy is to develop, acquire and deliver the integrated architectures/frameworks while the Elements develop and deliver models of their system. The Digital and HWIL product centers integrate this suite of Elements models into the overall simulation framework achieving a simulated BMDS wide capability while maintaining the open architecture standards. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by FFRDC and UARCs.

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E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Engineering Test Analysis Single Stimulation Framework Increment 1 Phase 2.0 WX04	Various/ Various	- -	0.000	46.538	Oct 2009	0.000		0.000		0.000	0	46.538	Continuing
Engineering Test Analysis Digital M&S and VV&A WX04	Various/ Various	- -	0.000	22.080	Oct 2009	0.000		0.000		0.000	0	22.080	Continuing
Subtotal			0.000	68.618		0.000		0.000		0.000	0.000	68.618	

Remarks

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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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			
Test & Evaluation Capability Development BMDS Flight Test WX04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB AL, NM, MA, HI & CA	12.943	2.164		0.000		0.000		0.000	0	15.107	Continuing
Test & Evaluation Capability Development Test Analysis and Reporting WX04	Various/ Various	CTF TA&R Huntsville, AL	8.323	0.000		0.000		0.000		0.000	0	8.323	Continuing
Target Certification Target Certification WX04	Various/ Various	USASMDC Huntsville, AL	0.633	0.679	Oct 2009	0.000		0.000		0.000	0	1.312	Continuing
Subtotal			21.899	2.843		0.000		0.000		0.000	0.000	24.742	

Remarks

NA

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			

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			21.899	71.461		0.000		0.000		0.000	0.000	93.360	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
PATRIOT 7-2 (PATRIOT Intercept Flight Test)		■																										
FTL-01 E1, E2 (ABL Intercept Flight Test)							■																					
GT-198 (Glory Trip TOO)		■																										
GT-195 (Glory Trip TOO)				■																								
PIM-01 (6.5-2 PATRIOT Intercept Flight Test)							■																					
JUNO RRF (HERA Risk Reduction Flight)							■																					
FTS-01 (STSS Demonstrator Flight Test)																												
FTL-02 (ABL Intercept Flight Test)																												
ATM-48 (PATRIOT Intercept Flight Test)							■																					
FCE-C Distributed (Regional Distributed Contingency Test)							■																					
FCE-C HWIL (Regional HWIL Contingency Test)							■																					
FTX-07 (GT-200) (Aegis Glory Trip TOO)							■																					
FTX-08 (GT-201) (ABL Glory Trip TOO)																												
FTX-09 (GT-202) (ABL Glory Trip TOO)																												
FTX-10 (Cobra Dane Tracking Test)																												
FTX-11 (GT-203) (Aegis Glory Trip TOO)																												
GT-199 (Glory Trip TOO)				■																								
GTX-04b (Full BMDS HWIL Test)																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
PATRIOT 6.5-2 (PATRIOT Intercept Flight Test)																												
PATRIOT 7-2A (PATRIOT Intercept Flight Test)						█																						
STSS-SVL (STSS Development Test)				█																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
PATRIOT 7-2 (PATRIOT Intercept Flight Test)	2	2009	2	2009
FTL-01 E1, E2 (ABL Intercept Flight Test)	2	2010	2	2010
GT-198 (Glory Trip TOO)	1	2009	1	2009
GT-195 (Glory Trip TOO)	4	2009	4	2009
PIM-01 (6.5-2 PATRIOT Intercept Flight Test)	1	2010	1	2010
JUNO RRF (HERA Risk Reduction Flight)	1	2010	1	2010
FTS-01 (STSS Demonstrator Flight Test)	3	2010	3	2010
FTL-02 (ABL Intercept Flight Test)	3	2010	3	2010
ATM-48 (PATRIOT Intercept Flight Test)	1	2010	1	2010
FCE-C Distributed (Regional Distributed Contingency Test)	1	2010	1	2010
FCE-C HWIL (Regional HWIL Contingency Test)	1	2010	1	2010
FTX-07 (GT-200) (Aegis Glory Trip TOO)	1	2010	1	2010
FTX-08 (GT-201) (ABL Glory Trip TOO)	3	2010	3	2010
FTX-09 (GT-202) (ABL Glory Trip TOO)	4	2010	4	2010
FTX-10 (Cobra Dane Tracking Test)	4	2010	4	2010
FTX-11 (GT-203) (Aegis Glory Trip TOO)	1	2011	1	2011
GT-199 (Glory Trip TOO)	3	2009	3	2009
GTX-04b (Full BMDS HWIL Test)	3	2010	3	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX04: <i>Test & Evaluation Capability Development</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
PATRIOT 6.5-2 (PATRIOT Intercept Flight Test)	2	2010	2	2010
PATRIOT 7-2A (PATRIOT Intercept Flight Test)	2	2010	2	2010
STSS-SVL (STSS Development Test)	4	2009	4	2009

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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>			
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
XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>	36.017	35.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	71.543
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project XX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The purpose of the BMDS Concurrent Test, Training, and Operations (CTTO) effort is to address the Unified Combatant Commanders high priority requirement for a capability to sustain BMDS operations while simultaneously supporting concurrent research, development, test, and evaluation; maintenance; training; and system upgrade activities without degrading the ability to defend the United States, its deployed forces, friends, and allies. CTTO will enable continued BMDS incremental and spiral development and testing while providing the Unified Combatant Commanders the ability to maintain their operational capability, participate in exercises, train, and rehearse mission scenarios while the system is in an operational state or ``on alert.`` The functions of the CTTO are to:

Increase confidence in the BMDS through rigorous concurrent test, training, and operations.

Enable BMDS testing and training in the field without degrading protection capability.

Sustain Unified Combatant Commanders BMDS operations while simultaneously supporting concurrent BMDS systems development and acquisition to defend the United States, its deployed forces, friends, and allies.

Safely inject consistent high fidelity test and evaluation threat data on operational equipment to exercise all phases of the kill chain using all sensor/shooter combinations.

Aid in Aegis Ballistic Missile Defense, Terminal High Altitude Air Defense, Ground-based Midcourse Defense, Sensors, and Fire Control standardization evaluation and certification for all BMDS personnel and ensures all crews are highly qualified to perform their mission-specific tasks by conducting exercises and wargames executed from actual equipment and networked configurations.

The Distributed Multi-Echelon Training System (DMETS) will specifically addresses the high priority Unified Combatant Commanders requirement to conduct distributed, high fidelity, and end-to-end strategic and operational training for missile defense operations that incorporates missile warning activity in any or all of the

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>				
BMDS Elements. The system will allow for scalable testing of the BMDS over the operational architecture as well as allow operators to train where they fight using a parallel architecture either physically separated or logically separated from the operational one; training will be scalable as well; from individual BMD assets to regional BMDS capabilities to the full BMDS global community.						
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
DMETS See Description Below <i>FY 2009 Accomplishments:</i> Delivered the Enterprise Service Framework (ESF) software version 1.0 capability. Operated and Sustained DMETS training and exercise suites and associated hardware and software at 80 hours per week. ; Continued providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture. <i>FY 2010 Plans:</i> Operate and Sustain DMETS training and exercise suites and associated hardware and software at 80 hours per week. Continue providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture. <i>FY 2011 Base Plans:</i> FY 2011 plans are captured in Budget Project MD04 <i>FY 2011 OCO Plans:</i> NA		10.361	9.066	0.000	0.000	0.000
CTTO See Description Below		25.656	26.460	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: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603888C: Ballistic Missile Defense Test and Targets	PROJECT XX04: Concurrent, Test, Training & Ops (CTTO)

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></p> <p>CTTO will specifically address the Unified Combatant Commanders high priority requirement for a capability to sustain BMDS operations while simultaneously supporting concurrent research, development, test, and evaluation; maintenance; training; and system upgrade activities without degrading the ability to defend the United States, its deployed forces, friends, and allies. CTTO will concurrently maintain operational capability while conducting testing and training using current and upgraded systems on BMDS operational-site communications networks by stimulating with live-fly test targets, targets of opportunity, and high fidelity simulated scenarios. CTTO will allow for vertical and horizontal scalability of the BMDS over the operational architecture using a parallel architecture either physically separated or logically separated from the operational one. BMDS CTTO will safely separate test, evaluation, and training venues from real-world activities; and allow injection of high-fidelity simulations to run realistic scenarios on operational equipment and networks. CTTO will enable end-to-end testing of the BMDS and enable BMDS training that allows operators to exercise any or all BMDS Elements, as needed.</p> <p>Developed Change Notice to implement CTTO content into the technical baseline</p> <p>Demonstrated that the AN/TPY-2 (Forward Based Mode), with a Radar Digital Signal Injection System, can connect to Missile Defense System Exerciser (MDSE Test Execution Control and Truth Interface Unit (TIU)) and then process truth data in real time</p> <p>Beam Tagging was demonstrated as a pathfinder to achieve CTTO objectives for a Virtual Over Live (VOL) capability.</p> <p>Demonstrated the effectiveness of Message Labeling as a separation technique</p> <p>Demonstrated an Implementation of a Gateway for Demilitarized Zone (DMZ) message traversal</p> <p>Demonstrated a User Datagram Protocol (UDP) multicast to the Transmission Control Protocol (TCP) and the Internet Protocol (IP) implementation</p> <p>Demonstrated Error Reporting</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Demonstrated an implementation of situational awareness screens for Configuration Awareness (BMDS Event Activity Monitor (BEAM))</p> <p>Demonstrated a core network prototype, which included evaluation of safety control for concurrency using physical and virtual separation techniques (data separation), differentiated Quality of Services (data accuracies and latencies), and Network Management and Control (including controls for removal and attachment of components to the network).</p> <p><i>FY 2010 Plans:</i></p> <p>Demonstrate initial network architecture and network enhancements, C2BMC Network Interface Processor Plus (CNIP+) and BEAM with representations of Element interactions.</p> <p>Coordinate and integrate BMDS CTTO Element-level activities and capabilities for the Change Notice to implement CTTO content into the technical baseline</p> <p>Prototype, if dictated by the Agency system engineering verification process, impacted Element implementations to validate requirements development process.</p> <p>As an initial implementation, plan, architect, design, and deploy, a Regional Test Network to support Agency integration of it Integrated Master Test Plan</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	36.017	35.526	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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>
• 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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The CTTO systems design and acquisition will follow the MDA's capability-based acquisition strategy that emphasizes fielding capabilities that address particular threats. The design and development of the BMDS CTTO capability is a collaborative effort. The government is the task manager to integrate the technical effort and manage the contracting efforts. The government, using existing competitively awarded contract structures, established a CTTO Project Office, determine BMDS CTTO requirements and standardization, determine BMDS Core Protocol and Standards, upgrades, technology insertion points, and synchronize BMDS Element level activities, training exercises and events and capabilities. The long term acquisition strategy is to normalize CTTO requirements into existing contract structures. The intent is to develop a fully capable CTTO capability that provides comprehensive, in-place, geographically dispersed test, training and evaluation of the complete BMDS. The CTTO approach supports evolutionary development, continuously building upon demonstrated capabilities to advance the BMDS capabilities.

E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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			
DMETS Integrated Training Operation and Sustainment XX04	C/CPAF	MDIOC/GM/ Boeing/MNTB Colorado Springs, CO/Huntsville, AL/Arlington, VA	13.914	7.100	Jul 2010	0.000		0.000		0.000	0	21.014	Continuing
DMETS Expand Integration Training Audience XX04	C/CPAF	MDIOC/MNTB Colorado Springs, CO/Arlington, VA	2.274	0.650	Jul 2010	0.000		0.000		0.000	0	2.924	Continuing
DMETS Improve Training Availability XX04	C/CPAF	MDIOC/MNTB Colorado Springs, CO/Arlington, VA	3.114	0.600	Jul 2010	0.000		0.000		0.000	0	3.714	Continuing
DMETS Improve Training Effectiveness XX04	C/CPAF	MDIOC/MNTB Colorado Springs, CO/Arlington, VA	2.964	0.610	Jul 2010	0.000		0.000		0.000	0	3.574	Continuing
DMETS Improve Training Quality XX04	C/CPAF	MDIOC/MNTB Colorado Springs, CO/Arlington, VA	0.594	0.106	Jul 2010	0.000		0.000		0.000	0	0.700	Continuing
CTTO CTTO Rapid Prototyping XX04	C/CPAF	MDIOC/GM/ Boeing/MNTB Colorado Springs, CO/Arlington, VA/ Huntsville, AL	35.007	12.460	Jul 2010	0.000		0.000		0.000	0	47.467	Continuing
CTTO Initial CTTO Staging and Integration XX04	C/CPAF	MDIOC/MNTB Colorado Springs, CO/Arlington, VA	8.297	13.000	Jul 2010	0.000		0.000		0.000	0	21.297	Continuing
	C/CPAF	MDIOC/MNTB	3.223	0.500	Apr 2010	0.000		0.000		0.000	0	3.723	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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			
CTTO Initial Training with Operations and Test XX04		Colorado Springs, CO/Arlington, VA											
CTTO Initiate Fielding to COCOM's XX04	C/CPAF	MNTB Arlington, VA	7.152	0.500	Apr 2010	0.000		0.000		0.000	0	7.652	Continuing
Subtotal			76.539	35.526		0.000		0.000		0.000	0.000	112.065	

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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				
	76.539	35.526		0.000		0.000		0.000	0.000	0.000	112.065	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603888C: *Ballistic Missile Defense Test and Targets*

PROJECT

XX04: *Concurrent, Test, Training & Ops (CTTO)*

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Expand Training Audience to Aegis BMD	■	■																										
Integrate THAAD Operator Training			■	■																								
Operated DMETS 50 Hours a Week	■	■																										
Sustain DMETS 50 Hours a Week			■	■																								
Operated DMETS 76 Hours a Week					■	■																						
Sustain DMETS 76 Hours a Week							■	■																				
Demonstrate Stimulation for AN/TPY-2			■	■																								
Demonstrate Improved Truth Network			■	■																								
Initiate BMDS Build E Requirements					■	■																						
Prototype Element CTTO Instantiations							■	■																				
CTTO Functionality Processes/Procedures							■	■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT XX04: <i>Concurrent, Test, Training & Ops (CTTO)</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Expand Training Audience to Aegis BMD	1	2009	2	2009
Integrate THAAD Operator Training	3	2009	4	2009
Operated DMETS 50 Hours a Week	1	2009	2	2009
Sustain DMETS 50 Hours a Week	3	2009	4	2009
Operated DMETS 76 Hours a Week	1	2010	2	2010
Sustain DMETS 76 Hours a Week	3	2010	4	2010
Demonstrate Stimulation for AN/TPY-2	3	2009	4	2009
Demonstrate Improved Truth Network	3	2009	4	2009
Initiate BMDS Build E Requirements	1	2010	2	2010
Prototype Element CTTO Instantiations	3	2010	4	2010
CTTO Functionality Processes/Procedures	3	2010	4	2010

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</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
YX04: <i>Test & Evaluation</i>	278.457	273.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	551.948
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content planned in Project YX04 in FY 2009-FY 2010 is captured in Project MD04 in FY 2011-FY 2015.

A. Mission Description and Budget Item Justification

The Test and Evaluation (T&E) projects provide consolidated MDA capabilities and resources to support the management and execution of Ballistic Missile Defense System (BMDS) and Element-level testing. With the evolution of the BMDS, testing needs have expanded beyond those of the individual Elements to include testing of BMDS Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) to anchor modeling and simulations. The Directorate for Test centralizes all authority and responsibility for all BMDS testing. The Directorate for Test relies on the BMD System Engineering to provide the system test objectives to define the test architecture. The Directorate for Test plans and executes BMD system test events. The Directorate for Test also develops the necessary test policy, test plans, and test infrastructure to conduct an effective test program. Directorate for Test activities are grouped into five functional areas: Test Resources; Test Operations; Test Planning and Design; Test Policy, Budget and Personnel; and Test Readiness and Truth. Other test related program content involving Facilities, Siting, and Environmental Management, and Fielding and Integration is also included within this T&E project.

Test Resources

The Test Resources Program develops, sustains, and modernizes the core T&E assets of the BMDS Test Bed to support System and Element-level Flight and Ground testing and assessment. This includes development, sustainment and modernization of the MDA mobile instrumentation tool box, BMD-unique ground test facilities, and MDA data centers. The mobile instrumentation tool box includes telemetry, radar, and optical data collection assets such as four (4) test aircraft equipped with optical sensors, mobile telemetry systems, the Kwajalein Mobile Range Safety System, the Mobile Launch Platform (MLP), the Telemetry and Instrumentation Ship and the Pacific Tracker X-Band Transportable Radar Ship (under development). These assets are required to collect the spatial data needed to execute the Flight Tests safely and collect the measurement data needed for BMDS performance evaluation. The Test Resources Program also makes focused investments to improve MDA-unique capability at Major Range & Test Facility Base activities. All of these assets enable robust Flight Testing and support mandatory safety and analysis data requirements in support of BMDS test activities. Because this core test capability is corporately sustained, the BMDS Test programs or the individual BMDS Elements pay only the direct costs associated with their specific test efforts. The Test Resources Program also provides for the development, sustainment and modernization

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
<p>of Element Hardware-In-the-Loop (HWIL) representations to support robust system-level ground testing. The Test Resources program also provides continuous improvement, expansion, and sustainment of System Ground Test Infrastructure. The Test Resources Program uses the Systems Engineer's products as the basis to evaluate the future resource needs of the BMDS. An annual analysis of data collection requirements and test scenarios versus existing and planned test assets identifies the test infrastructure needed to test the BMDS Elements as part of the test campaign. The Test Resources Program also includes the Pacific Range Support Team (PRST) to support the BMDS Test teams with range mission planning and execution expertise, development of common standards and mission assurance, and to recommend development or modification of mobile instrumentation to support MDA testing. We are expanding the PRST management philosophy to our ground test assets and this philosophy will include test resource-related improvements to training and integration efforts.</p> <p>Test Operations</p> <p>Test Operations executes the unified BMD test process. The Test Operations function prepares detailed plans and conducts all BMD system test events in conjunction with MDA and Non-MDA Elements. The Test Operations function consolidates personnel, processes, and resources in the elements and across MDA involved in flight and ground test execution into a cohesive team, relying heavily upon BMDS system test objectives determined by Systems Engineering. Engineering Test Analysis conducts system level analysis for all BMD system flight and ground test events and reports the results to MDA Leadership and the BMDS Community. Analysis is performed and reported using the Joint Analysis Team (JAT) process where system analysts and analysts from each participating element work together to plan analysis requirements and analyze test results. Comprehensive joint analysis produces cohesive system-level analysis, reduces flight test risk, and identifies operational capabilities and limitations through the use of standardized processes, tools, and products across all test venues. This analysis enables MDA Leadership to make capability delivery declarations to support Warfighter requirements.</p> <p>Test Planning and Design</p> <p>The Test Planning and Design program employs a three-phased strategy which will result in a process that produces an event-oriented test plan in the form of the BMDS Integrated Master Test Plan (IMTP) that extends out as many years as necessary to collect all data required to demonstrate specific missile defense functions. Phase I - Test Requirements Generation is the process by which the Director of Engineering, with support from Element programs, develops a comprehensive set of prioritized and configured test requirements. The IMTP contains the system-level objectives along with the critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) assigned to each event for data collection and model-anchoring purposes. Phase II - Test Design and Planning is designed to realize program objectives within current and future requirements, without imposed cost or resource constraints. Phase III - Aligned and Executable Baseline is to align the Phase II test designs so they are executable, affordable and efficient. The steady state test requirements development process requires the overall three phase approach to be conducted in concert with all supporting organizations. New test requirements will enter the process as the result of new BMDS functionality, test event data collection shortfalls, and other circumstances. The primary output of this process is the IMTP, which will be updated quarterly. Test Planning and Design will also develop detailed test designs and perform necessary feasibility analysis supporting MDA System Engineering, OTA, and Warfighter Test Objectives. The Test Planning and Design organization consists of three sub-components: Test Design, responsible for design of both ground and flight tests; Test Planning, responsible for planning</p>		

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

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test events; and Test Integration, primarily responsible for configuration management of the IMTP and BMDS Test Baseline. The Test Planning and Design directorate chairs the Test Planning Working Group (TPWG).

Test Policy, Budget, and Personnel

The Test Policy, Budget, and Personnel program supports the development and implementation of test policy, standards, directives, and procedures for creating unified BMD test processes which reflect the best practices of existing element processes. The Test Policy, Budget, and Personnel program also develops training and certification plans and International policy for the Directorate for Test. The Test Policy, Budget, and Personnel program provides policy and guidance on Knowledge Management (KM) practices, establishing standardized documentation for test planning, test reporting, and data archiving. The program also develops, coordinates, and manages Directorate for Test inputs into the overall BMDS Program Plans, Directorate for Test Base Closure and Realignment Commission (BRAC) related Transition Planning, and relocation of personnel. The program also coordinates Directorate for Test budget planning and execution activities, as well as Test Functional Area (TFA) activities. The Test Policy, Budget, and Personnel program supports two major assessments of the BMDS: The BMDS Capability Assessment (BCA) Team and System-Level Operational Test Agencies` (OTA) assessments. The BCA Team provides a non-advocate, independent assessment of the BMDS throughout its life cycle. Where possible, BCA Team members will recommend changes to the current test program and mitigation efforts to reduce performance degradation, implementation, and integration risks. Operational Test Agency (OTA) funding is consolidated within the Directorate for Test so they can provide operational assessments of the BMDS. The OTA maintains their assessments in the OTA database, which is a living document of the BMDS assessment.

Test Readiness and Truth

The Test Readiness and Truth program (formerly known as the BMDS Readiness program) is responsible for improving the quality, design, execution, and efficiency of the BMDS test programs in order to produce complete truth data products. The Test Readiness and Truth program is responsible for assuring readiness, training test personnel, ensuring realism, assessing adequacy, and tracking test risk process. The Test Readiness and Truth program will assess readiness processes and metrics for these programs and evaluate the outcomes. Test Readiness and Truth increases the efficiency and effectiveness of the BMDS test program by integrating key strategies and objectives into the Directorate for Test program by identifying and improving test processes. Test Readiness and Truth assesses test adequacy by conducting: Test assessments to identify data voids and unfulfilled objectives; Test design reviews to ensure tests are configured to support assessment activity; and Mission planning meetings to ensure the proper data will be collected for analysis and assessment.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test Resources	131.220	128.796	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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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></p> <p>Developed, maintained, integrated and upgraded MDA unique range facilities and instrumentation at the following ranges in accordance with Defense Test Resource Management Center (DTRMC) Guidance: White Sands Missile Range (WSMR), Kauai Test Facility (KTF), Wake Island, Pacific Missile Range Facility (PMRF), Reagan Test Site (RTS), Western Range / Vandenberg Air Force Base (VAFB), Naval Air Warfare Center (NAWC), the Kodiak Launch Complex (KLC), and other test sites as required.</p> <p>Operated High Altitude Observatory II (HALO-II), Wide-body Airborne Sensor Program (WASP), High Altitude Observatory I (HALO-I) for data collection services of BMD Flight Test.</p> <p>Completed the development of High Altitude Observatory III (HALO-III) as an Airborne Diagnostic Target (ADT) for Airborne Laser (ABL).</p> <p>Maintained and upgraded MDA unique Ground Test Facilities to support all the BMDS developmental program hardware and software testing. These facilities provided HWIL capability, threat signature measurement capability, and sensor calibration standards.</p> <p>Maintained and upgraded MDA unique Ground Test Facilities to support BMDS system-level Ground Tests. This included basic Ground Test Control as well as some Element representations.</p> <p>Continued to operate and maintain the telemetry and instrumentation ship to support off-range BMDS testing and increasingly complex test scenarios.</p> <p>Operated and maintained two Transportable Telemetry Systems (TTS), which provided long range missile telemetry acquisition, processing and archiving capability.</p> <p>Used the Pacific Range Support Team (PRST) to provide efficient planning, coordination and management of range resources and infrastructure in support of BMDS Flight Testing throughout the Pacific Test Bed.</p> <p>Continued development and independent verification and validation (IV&V) of the Range Safety Modeling Toolkit (RSMT) to provide common safety analysis tools.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010				
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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continued coordinating with the Targets Program to develop and qualify common Flight Termination and Range Tracking Systems that will simplify target integration at the ranges. Provided centralized data management, archival and distribution services to reduce the risks and cost of BMDS Development and Operational Deployment. The Data Centers comprise MDA's official archive for all MDA mission related scientific and technical data. Continued support of the Test and Evaluation Data Analysis Capability (TEDAC) to provide test communications among the MDA ranges and test situational awareness to MDA Headquarters. Continued development of the X-band Transportable Radar (XTR-1) to support off-range BMDS testing and increasingly complex test scenarios; selected candidate host platform to support XTR-1 mobile test support and initiated activation and modifications of the Pacific Tracker. Conducted design engineering analysis and ship reactivation efforts on the Pacific Tracker to support its development to host the XTR-1 radar and one of the TTS. Continued operations and sustainment of the Kwajalein Mobile Range Safety System (KMRSS). Sustained the Mobile Range Safety System (MRSS) at PMRF. Continued the NP-3 Upgrades to support off-range BMDS testing and increasingly complex test scenarios. Supported Department of Energy (DOE) in maintaining and operating the KTF to enable the launch of target systems supporting BMD Test Activities. Initiated efforts to transfer KTF from DOE to the Navy.</p> <p><i>FY 2010 Plans:</i> Develop, maintain, integrate and upgrade MDA unique range facilities and instrumentation at the following ranges in accordance with the Department of Defense Financial Management Regulation: WSMR, NAWC, KTF, Wake Island, PMRF, RTS, VAFB, KLC and other test sites as required. Operate HALO-III, HALO-II, WASP, HALO-I for data collection services on BMD Flight Test. Maintain and upgrade MDA unique Ground Test Facilities to support all the BMDS developmental program hardware and software testing. These facilities provide hardware in the loop capability, threat signature measurement capability, and sensor calibration standards.</p>						

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue to maintain and upgrade MDA unique Ground Test Facilities to support BMDS system-level Ground Tests; includes basic Ground Test Control as well as some Element representations.</p> <p>Use the PRST to provide efficient planning, coordination and management of range resources and infrastructure in support of BMDS Flight Testing throughout the Pacific Test bed.</p> <p>Continue coordinating with the Targets Program to develop and qualify common Flight Termination and Range Tracking Systems that will simplify target integration at the ranges.</p> <p>Provide centralized data management, archival and distribution services to reduce the risks and cost of BMDS Block Development and Fielding. The Data Centers comprise MDA's official archive for all MDA mission related scientific and technical data.</p> <p>Sustain the telemetry and instrumentation ship to support off-range BMDS testing and increasingly complex test scenarios.</p> <p>Operate two TTS that provide long range missile telemetry acquisition, processing and archiving capability.</p> <p>Develop third TTS to support larger range additional telemetry collection requirements.</p> <p>Continue support of the TEDAC to provide test communications among the MDA ranges and test situational awareness to MDA.</p> <p>Complete development of the XTR-1 and begin integration onto the Pacific Tracker.</p> <p>Provide for continued development and operations of the KMRSS to support BMDS RDT&E testing.</p> <p>Provide for continued development and operations of the MRSS at PMRF to support BMDS RDT&E testing.</p> <p>Provide for continued development and operations of the KTF to enable the launch of target systems supporting BMDS Test Activities.</p> <p>Continue efforts to transition KTF from DOE to the Navy.</p> <p><i>FY 2011 Base Plans:</i> NA</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Test Operations, Design, and Analysis		57.512	30.664	0.000	0.000	0.000
See Description Below						
<i>FY 2009 Accomplishments:</i> Provided the core contractor support/test teams that execute the BMDS block testing efforts described in budget projects AX04, BX04, CX04, DX04, EX04, and WX04. Prepared and coordinated the Test Directives for budget projects AX04, BX04, CX04, EX04, and WX04 test events. Developed GT requirements and scenarios and initial FT scenarios for budget projects AX04, BX04, CX04, EX04, and WX04 test events. Developed and coordinated System Event Test Plans, Element Test Plans, Test Design Review packages, and Mission Requirements Documents for budget projects AX04, BX04, CX04, EX04, and WX04 test events. Developed Communication Plans, Certification Packets, Mission Readiness Review Briefings, Test Event Go/No-go Criteria, Mission Viewing Plans, Test Event Launch/Test Constraints documents, Rear Detachment Plans and Executive Management Review Briefings for budget projects AX04, BX04, CX04, EX04, and WX04 test events. Supported target launch services and development for BMDS flight tests contained in budget projects AX04, BX04, CX04, EX04, and WX04 test events. Operated and enhanced the change control process to control the content, configuration and schedule of BMDS test events. Support regular updates to the IMTP. Develop Pre-mission Analysis Plans, input to the National Ranges Universal Documentation System (UDS) and JAT Mission Logistics Plans.						

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Performed system-level analysis and interoperability analysis, developed AEP and TAR, Lead JAT, developed and briefed Quick Look Briefings / Executive Quick Look Briefings (QLB/EQLB), and Mission Data Review / Executive Mission Data Review (MDR/ EMDR) for FTG-05, GTX-03c, GTD-03, FTT-10a, Fast Shield II, FCE-A (no TAR), FCE-B (no TAR), AST-13, GT-199 (no QLB/EQLB or MDR/ EMDR), GTX-03e, Caravan 2 USFT-3, and JDIE-08 (only analysis, AEP and MDR). Developed Analysis Execution Plans (AEP) for GT-198, FTG-06, and FTT-11. Continued support for medium and long range Aegis and THAAD Targets.</p> <p><i>FY 2010 Plans:</i> Provide the core contractor support/test teams that execute the BMDS block testing efforts described in budget projects AX04, BX04, CX04, DX04, EX04, and WX04. Prepare and coordinate the Test Directives for budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events. Develop GT requirements and scenarios and initial FT scenarios for budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events. Develop and coordinate System Event Test Plans, Element Test Plans, Test Design Review packages, and Mission Requirements Documents for budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events. Develop Communication Plans, Certification Packets, Mission Readiness Review Briefings, Test Event Go/No-go Criteria, Mission Viewing Plans, Test Event Launch/Test Constraints documents, Rear Detachment Plans and Executive Management Review Briefings for budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events. Support target launch services and development for BMDS flight tests contained in budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events. Operate and enhance the change control process to control the content, configuration and schedule of BMDS test events. Revise, coordinate and provide regular updates to the IMTP.</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>Provide campaign test planning mapped to knowledge points and fielding decisions identified to the new MDA block construct.</p> <p>Develop Pre-mission Analysis Plans, input to the National Ranges UDS, and JAT Mission Logistics Plans.</p> <p>Develop, deliver, and brief QLB, EQLB, MDR, EMDR, and Final Test Reports.</p> <p>Develop IDMP, DHP, and TDRD for budget projects AX04, BX04, CX04, DX04, EX04, and WX04 test events.</p> <p>Develop analysis data requirements documents, data collection/distribution requirements, Analysis Execution Plans, and end-to-end pre-test analysis for budget projects: AX04, BX04, CX04, DX04, EX04, and WX04 test events.</p> <p>Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP.</p> <p>Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP.</p> <p>Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP.</p> <p>Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Policy, Budget and Personnel</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Completed MDA Directive 3002.03, Ballistic Missile Defense System Test Policy, 15 January 2009.</p>	49.936	62.940	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>Completed MDA Directive 3224.01-M, Translated Global Positioning System (GPS) Range System (TGRS), 13 July 2009.</p> <p>Completed Ballistic Missile Defense System (BMDS) Test Concept of Operations (CONOPS), 8 April 2009.</p> <p>Completed 21 Integrated Event Test Teams (IETTs) Memorandum for Calendar 2009 Test Events.</p> <p>Completed Test Functional Area (TFA) Concept of Operations (CONOPS), 29 April 2009.</p> <p>Completed Test Functional Area (TFA) Management Plan, 7 May 2009.</p> <p>Continued to integrate mission assurance and best practices and lessons learned into test policy, processes, procedures and training and certification plans.</p> <p>Continued communications and interaction between the BMDS development community and Operational Test Agencies (OTA).</p> <p>Continued funding BMDS Operational Assessment Efforts.</p> <p>Continued the development and implementation of test policy, standards, directives, and procedures for creating unified BMD test processes.</p> <p>Continued to support transition planning of test functions from the National Capital Region (NCR) to Huntsville as part of BRAC.</p> <p>The BMDS Capability Assessment team (BCA) team conducted non-advocate assessments of the BMDS readiness and investigated BMDS performance issues and proposed mitigation plans.</p> <p>Continued to develop Test Policy memorandum to implement test functional area management.</p> <p><i>FY 2010 Plans:</i></p> <p>Continue to integrate mission assurance and best practices and lessons learned into test policy, processes, procedures, and training and certification plans.</p> <p>Continue communications and interaction between the BMDS development community and Operational Test Agencies (OTA).</p> <p>Continue funding BMDS Operational Assessment Efforts.</p> <p>Continue the development and implementation of test policy, standards, directives, and procedures for creating unified BMD test processes.</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>Continue to support transition planning of test functions from the National Capital Region (NCR) to Huntsville as part of BRAC.</p> <p>The BMDS Capability Assessment team (BCA) team will continue to update the non-advocate assessment of the BMDS readiness and investigate BMDS performance issues and propose mitigation plans. The BCA Team will also assess model fidelity based on test events that are reconstructed digitally and compared to mission day results for events in the IMTP.</p> <p>Continue to develop Test Policy memorandum to implement matrix management.</p> <p>Continue to coordinate Directorate for Test budget planning and execution activities, as well as Test Functional Area (TFA) activities.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Planning and Design</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i></p> <p>Rescoped the IMTP to focus on critical factor analysis to drive test design, planning and execution for accrediting Models and Simulation.</p> <p>Rescoped the IMTP to encompass all test activities within the BMDS Technical Baseline. Include integration of Operational Test requirements.</p> <p>Re-engineered the test planning and design program incorporating a three-phase process to capture test requirements; refined test designs so that the design focuses on specific functions that are executable, cost constrained and fulfill all approved test requirements.</p>	8.691	13.468	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>Re-engineered the test planning and design organization to most efficiently and effectively execute the revised test planning and design program.</p> <p>Developed and coordinated a test program designed to optimize test cadence and minimize delays in the test program.</p> <p>Incorporated into the re-engineered test planning process a top down approach which organized BMDS-level testing by campaign.</p> <p>Revised, coordinated and provided updates to the BMDS Integrated Master Test Plan (IMTP).</p> <p>Provided test planning support to Element working groups.</p> <p>Supported the Systems Engineer with representation on the Systems Engineering Working Group.</p> <p>Conducted engineering-based flight and ground test scenario design.</p> <p>Initiated development of a Test Planning and Design database.</p> <p>Incorporated the Kill-Web methodology into BMDS test design.</p> <p>Performed feasibility analysis to ensure that test designs support System Test Objectives and CEC/EMEs**.</p> <p>Provided campaign test planning associated with the 4 threat classes and BMDS effectiveness and efficiency.</p> <p>Produced a re-engineered IMTP that focused on model anchoring; verification, validation, and accreditation for applicable Models and Simulation (M&S).</p> <p>Generated test event data for planning, performance analysis prediction and feasibility studies for MDA Elements.</p> <p>Conducted flight safety, trajectory, threat, collision avoidance and mobile asset analysis, and sensor planning.</p> <p>Developed rapid prototyping process for Early Intercept Initiatives.</p> <p> </p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</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 2010 Plans:</i></p> <p>Coordinate, revise and provide updates to the IMTP. Expand scope of IMTP as MDA System Engineering expands the BMDS Technical Baseline to incorporate the BMDS Integrated Build D functionalities (e.g. Launch on/Engage ;on BMD System Track, improved sensor management and tasking, ;sensor correlation, and improved discrimination) ;and beyond.</p> <p>Support Phase 1 activities associated with BMDS Integrated Build D and beyond critical factor analysis.</p> <p>Chair Phase 2 and 3 phase test planning process.</p> <p>Continue to improve operational realism of test events by incorporating War fighter and Operational Test Agencies critical operational issues.</p> <p>Support risk assessment and mitigation of the BMDS test program.</p> <p>Develop and coordinated a revised test program designed to optimize test cadence and minimize delays in the test program.</p> <p>Provide test planning support to Element working groups.</p> <p>Support the Systems Engineer with representation on the Systems Engineering Working Group.</p> <p>Develop Test Design Documents, detailing the test event design and feasibility analysis to achieve System Test Objectives.</p> <p>Provide campaign test planning associated with the 4 threat classes and BMDS effectiveness and efficiency.</p> <p>Conduct flight safety, trajectory, threat, collision avoidance and mobile asset analysis, as well as sensor planning.</p> <p>Generate test event data for planning, performance analysis predictions, and feasibility test studies for MDA Elements.</p> <p>Provide test scenario designs for the IMTP.</p> <p> <i>FY 2011 Base Plans:</i></p> <p>NA</p>					

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Test Readiness and Truth See Description Below <i>FY 2009 Accomplishments:</i> Updated the BMDS Evaluation Strategy and further identified relevant metrics that contribute to the BMDS Evaluation Strategy. Provided Tested Kill Webs and BMDS Readiness Kill Webs for various forums including Executive Test Reviews, DT Monthly Test Readiness Reviews, Program Execution Reviews (PER), OSD and Congressional briefings. Provided an Adaptive Planning Approach for the Phase III of the IMTP process (May 09). Developed a new Test Readiness Assessment Approach (Jul 09). Prepared Kill Web Section for various Ground Test Final Analysis Reports. Initiated a Standardization, Evaluation, and Certification activity that will oversee training effectiveness and overall directive compliance. Completed organizational transition from BMDS Readiness to Test Readiness and Truth. Established Test Readiness Improvement Teams (TRITs) for Airborne Laser, Space Tracking and Surveillance Systems (STSS), and Multi-Kill Vehicle. Tracked issues to ensure processes are developed and implemented where needed, and identified options for processes that are missing or deficient. Contributed to the MDA Risk Management Program Development. Developed test event-specific training for personnel. Documented and improved the efficiency of truth data set processes. <i>FY 2010 Plans:</i> Assess processes and metrics that support readiness to test.		7.239	11.026	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>Identify options for processes that are missing or deficient. Track issues to ensure processes are developed and implemented where needed. Develop MDA test program Risk Management Standardization. Establish test lessons learned process to enable organizational learning. Establish additional Test Readiness Improvement Teams (TRITs) as needed. Develop a Test Readiness Assessment Dashboard View and Process to produce reports assessing overall Test Readiness. Develop and codify operational test training to qualify personnel (trainers, evaluators, and operators/ crews) in test operations. Develop truth plans for ground and flight tests as well as post-flight reconstruction. Deliver truth data products such as Truth Data Packages, Best Estimated Trajectories (BETs), Truth Summit Compilations, and executive-level brief inputs.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Facilities Siting, and Environmental See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Supported MDA MILCON planning and programming. Provided oversight for real property acquisition of the MILCON 2005 BRAC and RDT&E construction programs.</p>	3.678	3.801	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>Continued Support operations and maintenance of MDA-assigned facilities at test and operational locations worldwide, to include potential transfer of Kauai Test Facility from Department of Energy to the Department of Defense.</p> <p>Supported construction for scheduled BMDS test campaigns, to include USAKA, Pacific Missile Range Facility (PMRF), Vandenberg, Pt. Mugu, and Wake Island.</p> <p>Support site survey and bed-down approval process, launch facilities designs, and award of construction contracts.</p> <p>Used MDA's Strategic Plan for Environmental Management to manage and execute MDA's environmental activities and assets in a proactive and environmentally sound manner.</p> <p>Relied on MDA's Environmental Management System (EMS) to ensure environmental compliance with all applicable U.S. laws and regulations, DoD and Service regulations and policies, Executive Orders, binding international agreements, host-nation requirements, and other requirements that seek to preserve, protect, or enhance human health and/or the environment across all MDA operations and activities.</p> <p>Planned, programmed, and budgeted to achieve, monitor, and maintain compliance IAW environmental laws.</p> <p>Integrated environmental factors, issues, and values in MDA's acquisition decision-making process to mitigate risk to cost, schedule, and performance while protecting the environment.</p> <p>Promoted awareness and understanding of environmental management in all phases of MDA's acquisition mission and provided appropriate training to all MDA personnel.</p> <p>Conducted required Agency reporting on environmental liabilities and environmental expenditures.</p> <p><i>FY 2010 Plans:</i> Support MDA MILCON planning and programming to include the FY10 and FY11 submittal. Provide oversight for real property acquisition of the MILCON 2005 BRAC and RDT&E construction programs.</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>Continue Support operations and maintenance of MDA-assigned facilities at test and operational locations worldwide, to include Aegis Ashore and potential transfer of Kauai Test Facility from Department of Energy to the Department of Defense. Support construction for scheduled BMDS test campaigns, to include USAKA, Kodiak, PMRF, Vandenberg, Pt. Mugu, and Wake Island. Support site survey and bed-down approval process, launch facilities designs, and award of construction contracts. Use MDA`s Strategic Plan for Environmental Management to manage and execute MDA`s environmental activities and assets in a proactive and environmentally sound manner. Rely on MDA`s EMS to ensure environmental compliance with all applicable U.S. laws and regulations, DoD and Service regulations and policies, Executive Orders, binding international agreements, host-nation requirements, and other requirements that seek to preserve, protect, or enhance human health and/or the environment across all MDA operations and activities. Plan, program, and budget to achieve, monitor, and maintain compliance IAW environmental laws. Integrate environmental factors, issues, and values in MDA`s acquisition decision-making process to mitigate risk to cost, schedule, and performance while protecting the environment. Promote awareness and understanding of environmental management in all phases of MDA`s acquisition mission and provide appropriate training to all MDA personnel. Conduct required Agency reporting on environmental liabilities and environmental expenditures.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Fielding and Integration See Description Below		7.816	6.824	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></p> <ul style="list-style-type: none"> Supported Real World activities (i.e., Contingency Analysis and Activation Team (CAAT) and Dynamic Spring) and short notice strategic program re-direction options (Alternate Program Futures). Began planning for BMDS level Capability Deliveries. Coordinated drafts of BMDS and Element program baseline documentation (Single Acquisition Management Plan (SAMP), Program Acquisition Characteristics (PAC)). Transitioned Integration Synchronization Center (ISC) functions within the MDA organization. Transitioned Block Fielding and Integration to MDA Plans, Programs and Integration. Developed mission needs for the Decision Support System acquisition. Coordinated planning for the development and implementation of a BMDS Common Work Breakdown Structure. Continued integrated BMDS integration planning and execution. Published BMDS Master Plan. Continued to execute the BMDS Change Management process. <p><i>FY 2010 Plans:</i></p> <ul style="list-style-type: none"> Coordinate synchronization of System Engineering and Test and Evaluation processes for POM12. Support BMDS Common Work Breakdown Structure development and implementation. Support Decision Support System acquisition activities and initial implementation. Update of the BMDS Master Plan. Update BMDS program documentation (SAMP, PAC). Coordinate capability delivery process execution with CD-04. Continue conducting integrated BMDS integration planning and execution. Continue to execute the BMDS Change Management process. <p><i>FY 2011 Base Plans:</i></p> <p>N/A</p>					

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B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA								
MDA Infrastructure See Description Below <i>FY 2009 Accomplishments:</i> Provided Quality, Safety, and Mission Assurance to BMD test program. Provided Dedicated Information Technology services for mission specific research and test efforts to include classified and unclassified networks, software licenses, sustainment and information assurance certification. Provided Common Threat Engineering data to support BMDS test and assessment planning to include (trajectory and signature data to directly support system and sub-system requirements). <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> FY 2011 plans are captured in budget project MD04. <i>FY 2011 OCO Plans:</i> NA				12.365	0.000	0.000	0.000	0.000
Concurrent Test, Training and Operations (DMETS) See Description Below <i>FY 2009 Accomplishments:</i> N/A				0.000	15.972	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 2010 Plans:</i> Upgrade DMETS to mirror the deployed systems. Includes technical refresh. Expand training audience to include regional and theater training. Integrate additional BMDS assets to support training on current and next BMDS configuration. Begin initial integration efforts with evolving Agency modeling and simulation development efforts.</p> <p><i>FY 2011 Base Plans:</i> FY 2011 plans are captured in budget project MD04.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	278.457	273.491	0.000	0.000	0.000

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
• 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

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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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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>
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>											
• 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
• 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

The MDA Test Program acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, spiral development, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, FFRDC, and other MDA programs to execute the various diverse efforts within the BMDS test program. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent, the acquisition strategy that conforms to their respective headquarters regulations are utilized. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>

E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Test Resources Ground Test Facilities YX04	Various/ Various	Army, Air Force AL, FL, MD, TN	43.546	26.862	Oct 2009	0.000		0.000		0.000	0	70.408	Continuing

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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			
Test Resources Ranges and Instrumentation YX04	Various/ Various	Various CA, HI, NM, Marshall Islands, AK	173.562	68.600	Oct 2009	0.000		0.000		0.000	0	242.162	Continuing
Test Resources Airborne Sensors YX04	C/CPAF	L3 Communications OK, RTSC, CA	53.453	4.596	Oct 2009	0.000		0.000		0.000	0	58.049	Continuing
Test Resources Data Centers YX04	Various/ Various	Various TN, CO, AL, CA	18.766	12.168	Oct 2009	0.000		0.000		0.000	0	30.934	Continuing
Test Resources Target Launch Services YX04	Various/ Various	Various Various	18.000	0.000		0.000		0.000		0.000	0	18.000	Continuing
Test Operations, Design, and Analysis Targets YX04	Various/ Various	Various Various	19.616	0.000		0.000		0.000		0.000	0	19.616	Continuing
Test Policy, Budget and Personnel BCAT YX04	Various/ Various	Various NJ, CO, MD, MA	21.762	10.502	Oct 2009	0.000		0.000		0.000	0	32.264	Continuing
Test Policy, Budget and Personnel Operational Test Agency Participation in System Test YX04	Various/ Various	OTAs Various	30.954	16.000	Oct 2009	0.000		0.000		0.000	0	46.954	Continuing
Test Policy, Budget and Personnel Target Certification YX04	Various/ Various	USASMDC Huntsville, AL	0.497	0.000		0.000		0.000		0.000	0	0.497	Continuing
Test Planning and Design Test Planning and Design YX04	Various/ Various	Various Various	15.283	13.468	Oct 2009	0.000		0.000		0.000	0	28.751	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX04: <i>Test & Evaluation</i>
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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			
Test Readiness and Truth Continuous Process Improvement YX04	Various/ Various	Various Various	6.637	0.000	Oct 2009	0.000		0.000		0.000	0	6.637	Continuing
Test Readiness and Truth Independent Assessment YX04	Various/ Various	Various Various	2.465	0.000	Oct 2009	0.000		0.000		0.000	0	2.465	Continuing
Test Readiness and Truth Truth Data YX04	Various/ Various	Various Various	0.000	7.900		0.000		0.000		0.000	0	7.900	Continuing
Test Readiness and Truth Test Training and Readiness YX04	Various/ Various	Various Various	0.000	3.126		0.000		0.000		0.000	0	3.126	Continuing
MDA Infrastructure MDA Infrastructure YX04	Various/ Various	Various Various	5.643	0.000		0.000		0.000		0.000	0	5.643	Continuing
MDA Infrastructure HSV IT O&M YX04	C/CPAF	Advanced Systems Development Huntsville, AL	3.097	0.000		0.000		0.000		0.000	0	3.097	Continuing
MDA Infrastructure Defend Systems & Networks YX04	C/CPAF	Northrop Grumman CO	1.478	0.000		0.000		0.000		0.000	0	1.478	Continuing
MDA Infrastructure Service/IM/IT YX04	TBD/TBD	Advanced Systems Development Huntsville, AL	0.896	0.000		0.000		0.000		0.000	0	0.896	Continuing
	C/CPFF	General Dynamics	1.063	0.000		0.000		0.000		0.000	0	1.063	Continuing

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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			
MDA Infrastructure Information Assurance C&A YX04		Information Technology VA											
Concurrent Test, Training and Operations (DMETS) Test, Training and Integration Enablers YX04	Various/ Various	Various Various	0.000	15.972	Oct 2009	0.000		0.000		0.000	0	15.972	Continuing
Subtotal			416.718	179.194		0.000		0.000		0.000	0.000	595.912	

Remarks

Test Resources Notes:

- Ground Test Facility (GTF) Funding is issued from MDA to the Army and Air Force. The services provide funds to the Kinetic Hardware in-the-loop (HWIL) Simulator in FL, and the Arnold Engineering Development Center in TN. Each Facility then places funds on contract and/or retains funding to support on-site personnel.

- Ranges and Instrumentation funding is distributed to executing agents through the services and issued directly from MDA. The Army (SMDC) MIPRs funds to the Reagan Test Site in the Marshall Islands for range operations, instrumentation upgrades, and various PRST efforts. The Air Force issues funding to Wake Island for test operations support. The remaining funds are issued directly from MDA. Funds are MIPRed to members of the Pacific Range Support Team (PRST) (Patrick AFB, Vandenberg AFB, Pacific Missile Range Facility, Naval Air Warfare Center/Patuxent River & Pt Mugu, White Sands Missile Range, and Sandia National Labs), MIT/LL (Airborne Sensor support, Test Infrastructure support, and XTR-1 development), Naval Research Lab (NRL) (BMDS Test Communications), and DOT/Maritime Administration (Telemetry and Instrumentation ship Operations and Maintenance and Pacific Tracker Activation). Funds are placed directly on an MDA contract with the Alaska Aerospace Development Corporation (AADC) for Kodiak Launch Complex Operations and Sustainment.

- Data Center Funding is issued from MDA to the Army, Air Force, and Navy. The services provide funds to the Army Missile Signature Center in TN, Naval Surface Warfare/ Weapons Center (Corona) in CA, Missile Defense Data Center in AL. The Data Centers place the funds on contract and/or retain funding to support on-site personnel.

- Project includes Congressional additions for test and training range support and upgrades.

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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			
Test Resources SMDC Government Salaries YX04	TBD/TBD	USASMDC Huntsville, AL	0.100	0.000		0.000		0.000		0.000	0	0.100	Continuing
Test Resources Support Contracts YX04	C/FFP	Northrop Grumman Arlington, VA	24.466	16.570	Oct 2009	0.000		0.000		0.000	0	41.036	Continuing
Test Operations, Design, and Analysis Support Contracts YX04	C/FFP	, TASC, Sparta, RND Arlington, VA	75.537	13.376	Oct 2009	0.000		0.000		0.000	0	88.913	Continuing
Test Operations, Design, and Analysis Joint Analysis Team YX04	C/FFP	Various Various	0.000	17.288		0.000		0.000		0.000	0	17.288	Continuing
Test Policy, Budget and Personnel TE Government Salaries YX04	TBD/TBD	- Washington, DC	27.519	16.528	Oct 2009	0.000		0.000		0.000	0	44.047	Continuing
Test Policy, Budget and Personnel Support Contracts YX04	C/FFP	TASC, Sparta Arlington, VA	14.213	18.565	Oct 2009	0.000		0.000		0.000	0	32.778	Continuing
Test Policy, Budget and Personnel TE Travel YX04	TBD/TBD	-	2.651	1.345	Oct 2009	0.000		0.000		0.000	0	3.996	Continuing
Test Policy, Budget and Personnel International Programs YX04	TBD/TBD	- Washington, DC	0.917	0.000	Oct 2009	0.000		0.000		0.000	0	0.917	Continuing
	C/FFP	Various/TASC, Sparta	5.017	0.000	Oct 2009	0.000		0.000		0.000	0	5.017	Continuing

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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			
Test Readiness and Truth Support Contracts YX04		Arlington, VA											
Facilities Siting, and Environmental Support Contracts YX04	C/FFP	ICF, SciComm VA, MD	7.542	3.801	Oct 2009	0.000		0.000		0.000	0	11.343	Continuing
Fielding and Integration Government Salaries YX04	TBD/TBD	- Washington, DC	0.924	0.956	Oct 2009	0.000		0.000		0.000	0	1.880	Continuing
Fielding and Integration Support Contracts YX04	C/CPAF	Computer Sciences Corp. Falls Church, VA	6.594	5.868	Oct 2009	0.000		0.000		0.000	0	12.462	Continuing
Subtotal			165.480	94.297		0.000		0.000		0.000	0.000	259.777	

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
	582.198	273.491		0.000		0.000		0.000	0.000	855.689	

Remarks

NA

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

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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
MD04: <i>Test Program</i>	0.000	0.000	559.133	0.000	559.133	477.588	453.047	435.093	399.100	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects YX04, XX04, AX04, BX04, CX04, DX04, EX04, and WX04 for FY 2009-FY 2010 is now captured in Project MD04.

All funding in this budget project supports the budgetary objective of Proving BMDS.

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.

A. Mission Description and Budget Item Justification

The Test and Evaluation (T&E) projects provide consolidated Missile Defense Agency (MDA) capabilities and resources to support the management and execution of Ballistic Missile Defense System (BMDS) and Element-level testing. With the evolution of the BMDS, testing needs have expanded beyond those of the individual Elements to include testing of BMDS Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME) to anchor modeling and simulations. The Directorate for Test centralizes all authority and responsibility for all BMDS testing. The Directorate for Test relies on BMD Systems Engineering to provide the system test objectives to define the test architecture. The Directorate for Test plans and executes BMD system test events. The Directorate for Test also develops the necessary test policy, test plans, and test infrastructure to conduct an effective test program. Directorate for Test activities are grouped into six major areas: Test Policy, Budget, and Functional Management; Test Planning and Design; Test Mission Management and Integration; Test Operations; Test Data Management; and Test Resources. Other test related program content involving Engineering Test Analysis, Concurrent Test, Training, and Operations, Fielding and Integration, and Facilities, Siting, and Environmental Management, is also included within this T&E project.

Proving BMDS

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
<p>Funding within this budget project supports the budgetary objective of Proving BMDS. The goals of this budgetary objective are to continue and improve a robust testing program, and to enhance modeling and simulation efforts to provide, in conjunction with flight and ground testing, confidence to the warfighter that the missile defense system works.</p> <p>The MDA test program conducts a rigorous review involving MDA, along with the Army, Navy, Air Force and Operational Test Agencies to review BMDS models and simulations to determine the data needed to accredit them using a comprehensive Verification, Validation and Accreditation process. Working with the Services, Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), the test program was restructured to improve confidence in the missile defense capabilities under development and ensure the capabilities transferred to the warfighter are operationally effective, suitable, and survivable.</p> <p>Test Policy, Budget, and Functional Management</p> <p>The Test Policy, Budget, and Functional Management program supports the development and implementation of test policy, standards, directives, and procedures for creating unified BMD test processes which reflect the best practices of existing element processes. The Test Policy, Budget, and Functional Management program also develops training and certification plans and International policy for the Directorate of Test. The Test Policy, Budget, and Functional Management program provides policy and guidance on Knowledge Management (KM) practices, establishing standardized documentation for test planning, test reporting, and data archiving. The program also develops, coordinates, and manages Directorate for Test inputs into the overall BMDS Program Plans, Directorate for Test Base Closure and Realignment Commission (BRAC) related Transition Planning, and relocation of personnel. The program also coordinates Directorate for Test budget planning and execution activities, as well as Test Functional Area (TFA) activities. The Test Policy, Budget and Functional Management program also supports System-Level Operational Test Agencies` (OTA) assessments. OTA funding is consolidated within the Directorate for Test so they can provide operational assessments of the BMDS. The OTA maintains their assessments in the OTA database, which is a living document of the BMDS assessment.</p> <p>Test Planning and Design</p> <p>Test Planning and Design performs campaign-level planning and design functions for the BMDS Test program. This includes the collection and adjudication of test objectives from BMD Systems Engineering, the OTA, and the warfighters; development of ground and flight test campaigns; validation of test venues and test scenarios; adaptive test planning; contingency planning; definition of test resource requirements, establishing a baseline test campaign timeline, and interfacing with co-located OTA and stakeholder representatives. These efforts culminate in the development and publication of the Integrated Master Test Plan (IMTP) which documents the test component of the BMDS Test Baseline across the Future Years Defense Plan (FYDP).</p> <p>The Test Planning and Design function employs a three-phased strategy which will result in a process that produces an event-oriented test plan in the form of the BMDS IMTP that extends out as many years as necessary to collect all data required to demonstrate specific missile defense functions. During this three-phase</p>		

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<p>comprehensive test review, MDA in conjunction with the Army, Navy, and Air Force OTAs reviewed the BMDS models and simulations to determine the data needed to accredit them using a comprehensive Verification, Validation, and Accreditation (VV&A) process. Much of the data needed to understand and assess system survivability, operational performance, reliability, and supportability can only be measured through ground tests and flight tests.</p> <p>The steady state test requirements development process requires the overall three phase approach to be conducted in concert with all supporting organizations. New test requirements will enter the process as the result of new BMDS functionality, test event data collection shortfalls, and other circumstances. The primary output of this process is the IMTP, which will be updated quarterly.</p> <p>Test Mission Management and Integration</p> <p>The Test Mission Management and Integration program plans, programs, and budgets the unified BMD test process. The Mission Management and Integration program prepares detailed plans and integrates all BMD system test events in conjunction with MDA and non-MDA elements. The Test Mission Management and Integration program consolidates personnel, processes, and resources in the elements and across MDA involved in Flight Test (FT) and Ground Test (GT) planning into a cohesive team, relying heavily upon BMDS system test objectives determined by BMD Systems Engineering. The Test Mission Management and Integration program performs BMDS test configuration control and asset management and integrates Flight and Ground Test scheduling and deconfliction. Mission Management function also provides end-to-end test cost oversight on flight and ground tests. Test Mission Management and Integration personnel form the core of the Integrated Event Test Teams for FTs, GTs and Contingency Operations providing the System Mission Manager (SMM) and technical support who perform mission management and integration functions initiating 18 months prior to the test date. The SMM provides leadership and continuity throughout the test life cycle, and serves as the test expert matrixed to the senior MDA leadership in charge of each of the five phases of testing from requirements generation through planning, readiness, execution, and data reduction and analysis. The mission management team synchronizes efforts from each of the Elements, BMD System Engineering, Test Data Management, Test Operations, and Test Resources to develop all mission documentation including Test Directives, Executive Reviews, resource requirements, mission viewing plans, and financial management of mission event funds.</p> <p>Test Operations</p> <p>The Test Operations division is responsible for executing all BMDS Ground Tests (GTs) and Flight Tests (FTs), which are necessary to provide the necessary data to demonstrate capability deliveries and BMDS capabilities. Test Operations provides mission Test Directors (TDs), who work in concert with their respective SMMs to ensure mission readiness for test, and who are then responsible for execution of BMDS system level execution activities during the run-up to test and on mission day. Test operations also manages, assigns, and dispositions mission related risk items via the Mission Risk Working group (MRWG) for BMDS test events and maintains a data base of BMDS Test Incident Reports (BTIRs) for those events from which lessons learned are extracted and applied to future tests. Test Operations is responsible for developing and maintaining a formal training and certification program for BMD management and execution personnel from each of the elements, as well as for other DT console operators. Test events include tests for Ground-Based Mid-Course Defense program, Aegis BMD, THAAD, sensors (SBX, AN/TPY-2, SN/</p>		

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<p>SPY-1), C2BMC, allied weapon systems, and other developing elements like Airborne Laser and Space Tracking and Surveillance System (STSS). The test events are used to anchor system models and provide data to warfighters and senior decision makers regarding fielding and capability deliveries. The test events also address the demonstration of PATRIOT Upper Tier Debris Mitigation capability and the Aegis Weapon System SM-2 Block IV Sea-Based Terminal capability, demonstrate operationally realistic multi-national communication networks, perform directed engagements and engagement coordination among different participants, and assess MDA's increased capability to support Critical Empirical Conditions (CECs) and Empirical Measurement Events (EMEs)** identified in the BMDS Integrated Master Test Plan (IMTP). International partners include but are not limited to Japan, Israel, and other potential future BMD International Partners.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p>Test Data Management</p> <p>The Test Data Management program performs truth data analysis for all BMDS tests, performs data requirements definition, facilitates data collection, and manages Data Center functions for all BMDS tests. The Test Data Management program assures readiness, trains test personnel, ensures realism, assesses adequacy, and tracks test risk process. The Test Data Management program will assess readiness processes and metrics for these programs and evaluate the outcomes. Test Data Management program increases the efficiency and effectiveness of the BMDS test program by integrating key strategies and objectives into the Directorate for Test program by identifying and improving test processes. Test Data Management program assesses test adequacy by conducting: test assessments to identify data voids and unfulfilled objectives; test design reviews to ensure tests are configured to support assessment activity; and Mission planning meetings to ensure the proper data will be collected for analysis and assessment. The test training program provides BMDS operations, test operations, missile and range instrumentation training to test personnel to prepare them for Flight and Ground test console operations. The training program conducts console training exercises in the Advanced Research Center (ARC) Training and Operations Center. The training program also monitors, documents, and records operator and team performance in preparation for specific missions at the mission control site in an automated database. The Test Data Management program develops, sustains, and modernizes the Missile Defense Data Center (MDDC).</p> <p>Test Resources</p> <p>The Test Resources program develops, sustains, and modernizes the core T&E assets of the BMDS Test Bed to support System and Element-level Flight and Ground testing and assessment. This includes development, sustainment, and modernization of the MDA mobile instrumentation tool box, and BMD-unique ground test facilities. The mobile instrumentation tool box includes telemetry, radar, and optical data collection assets such as four (4) test aircraft equipped with optical sensors, mobile telemetry systems, the Kwajalein Mobile Range Safety System, the Mobile Launch Platform (MLP), the Telemetry and Instrumentation Ship, and the Pacific Tracker X-Band Transportable Radar Ship (under development). These assets are required to collect the spatial data needed to execute the flight tests safely and collect the measurement data needed for BMDS performance evaluation. The Test Resources program also makes focused investments to improve MDA-unique capability at Major Range & Test Facility Base activities. All of these assets enable robust flight testing and support mandatory safety and analysis data requirements</p>		

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<p>in support of BMDS test activities. This core test capability is corporately sustained for the BMDS Test Program. The Test Resources program also provides for the development, sustainment, and modernization of Element Hardware-In-the-Loop (HWIL) representations to support robust System-level ground testing. The Test Resources program also provides continuous improvement, expansion, and sustainment of System Ground Test Infrastructure. The Test Resources program uses the BMD Systems Engineer`s products as the basis to evaluate the future resource needs of the BMDS. An annual analysis of data collection requirements and test scenarios versus existing and planned test assets identifies the test infrastructure needed to test the BMDS Elements as part of test campaign. The Test Resources program also includes the Pacific Range Support Team (PRST) to support the BMDS test teams with range mission planning and execution expertise, development of common standards and mission assurance, and to recommend development or modification of mobile instrumentation to support MDA testing. The Test Resources program is expanding the PRST management philosophy to Test Resources ground test assets and this philosophy will include test resource-related improvements to training and integration efforts.</p> <p>The BMD Digital Simulations Architecture (DSA) is the primary Modeling and Simulations (M&S) System framework used to integrate Elements baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. Each BMDS Element supports the M&S Program by providing digital representations ready for integration into the BMDS system-level framework. The DSA-performance architecture and Element and component high fidelity models support PA events, which provide critical system level performance data relative to all elements, system engineers, M&S developers, the Operational Test Agency, and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.</p> <p>The BMD Single Stimulation Framework (SSF) utilizes Hardware-in-the-Loop (HWIL) assets to support primarily BMDS ground testing, pre and post flight test mission construction and reconstruction, portions of the training capability, Wargames, exercises, BMDS contingency studies, as well as various other use cases to enable BMDS performance in a simulated environment. Each BMDS Element supports the Modeling and Simulation Program by providing HWIL representations ready for integration into the BMDS system-level framework to support full-envelope BMDS ground test, flight test, and training events based upon MDA and Warfighter needs. The Test Resources Program supports the ground test program by providing the infrastructure required to support execution of these tests.</p> <p>Engineering Test Analysis</p> <p>Engineering Test Analysis provides the leadership, tools, and processes to conduct pre- and post-mission system level analysis for all BMD system flight and ground test events. Analysis is performed and reported using the Joint Analysis Team (JAT). Pre-mission analysis provides essential risk reduction analysis used to optimize conditions for successful accomplishment of the primary mission objectives. Post-mission analysis is performed to assess the primary and secondary test objectives and to identify mission-specific performance enhancements or anomalies that were observed.</p> <p>The BMDS Capability Assessment team (BCAT) team conducts non-advocate assessments of the BMDS readiness and investigates BMDS performance issues and proposes mitigation plans.</p>		

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Target and Countermeasures Requirements Directorate is responsible for the development of BMDS level target and countermeasures class capabilities and mission specific requirements that meet system and element flight and ground test requirements. Target requirements development requires expertise in countermeasures, signatures, RV dynamics, trajectory assessments, threat capabilities, sensors, and current/predicted threat capabilities as well as weapon system capabilities to provide leadership information/data at a sufficient level and in an adequate timeframe for decision making and planning.

Target certification assures that a target recommended for certification meets the mission and test objectives with the target characteristics identified for that test event. The Target Accreditation Report, the basis for certification, compares the target's capabilities against the capabilities required by the BMDS Target Requirements Document and the test event described in the IMTP.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Test Policy, Budget and Functional Management See Description Below <i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Project YX04. <i>FY 2010 Plans:</i> FY 2010 ;plans are captured in Budget Project YX04. <i>FY 2011 Base Plans:</i> Integrate mission assurance and best practices and lessons learned. Communicate and interaction between the Ballistic Missile Defense System (BMDS) development community and Operational Test Agencies (OTA). Provide a BMDS operational assessment based on warfighter defended areas in the areas of effectiveness, suitability, survivability, interoperability, and transition. Develop and implement test policy, standards, directives, and procedures for creating unified BMD test processes.	0.000	0.000	44.699	0.000	44.699

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0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	MD04: <i>Test Program</i>			
B. Accomplishments/Planned Program (\$ in Millions)					
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Support transition planning of test functions from the National Capital Region (NCR) to Huntsville; transition activities planned completion is in FY 2011. Develop Test Policy memorandum to implement matrix management. Coordinate budget planning and execution activities, as well as Test Functional Area (TFA) manpower activities.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Planning and Design See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Project YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Project YX04.</p> <p><i>FY 2011 Base Plans:</i> Coordinate, revise, and provide regular updates to the Integrated Master Test Plan (IMTP). Expand scope of the IMTP as BMD System Engineering expands the Ballistic Missile Defense System (BMDS) Technical Baseline to incorporate the BMDS Integrated Build D functionalities (e.g. Launch on/Engage on BMD System Track, improved sensor management and tasking, sensor correlation, and improved discrimination) ;and future integrated builds of the IMTP. Support Phase I (Engineering) activities associated with determining critical factors, data points, and EMEs and CECs** required to support Verification, Validation, and Accreditation (VV&A) of Modeling and Simulations (M&S).</p>	0.000	0.000	12.628	0.000	12.628

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Improve operational realism of test events by incorporating Warfighter and Operational Test Agencies critical operational issues. Support risk assessment and mitigation of the BMDS test program. Develop and coordinate a revised test program designed to optimize test cadence and minimize delays in the test program. Provide test planning support to Element working groups. Support the MDA Systems Engineer with representation on the Systems Engineering Working Group. Develop Test Design Documents, detailing the test event design and feasibility analysis to achieve System Test Objectives. Provide campaign test planning associated with the four threat classes and BMDS effectiveness and efficiency. Conduct flight safety, trajectory, threat, collision avoidance, and mobile asset analysis, as well as sensor planning. Generate test event data for planning, performance analysis predictions, and feasibility test studies for MDA Elements. Provide test scenario designs for the IMTP, requirements for long-range test architecture, and operational comparison analysis for MDA.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Operations, Mission Management and Integration See Description Below</p>	0.000	0.000	91.393	0.000	91.393

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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> FY 2009 accomplishments are captured in Budget Projects AX04, BX04, CX04, DX04, EX04, WX04, and YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Projects AX04, BX04, CX04, DX04, EX04, WX04, and YX04.</p> <p><i>FY 2011 Base Plans:</i> Complete detailed test planning and mission management and integration for FY 2011 Ballistic Missile Defense (BM) system level and other test events. Provide System Mission Managers to lead Integrated Event Test Team mission management and readiness activities across all five test event phases for System and Element flight and ground tests and contingency operations. Support BMDS Elements in planning and integration of their program specific Flight and Ground Tests. Support planning and execution of BMDS Contingency Operations. Prepare and conduct all phase test readiness reviews and schedule all Executive test reviews. Perform BMDS test configuration control and asset management. Complete BMDS Daily Test Status and integrate Flight and Ground Test scheduling and deconfliction. Complete IETT and Test Directive memorandums. Support end-to-end test cost oversight on flight and ground tests. Integrate and support all Associated Operations on flight and ground test events. Integrate and develop Test Event Viewing Plans and conduct all test event viewing. Support BMD System Engineering and Warfighter requirements and integration of multiple Elements, Operational Test Agency (OTA) and test support team into BMDS system flight and ground test events. Refine scenario designs for BMDS flight tests to support Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs)** identified in BMDS Integrated Master Test Plan. Initiate planning for FY 2012 BMDS system level and other test events.</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>Complete detailed test planning and execute FY 2011 Ballistic Missile Defense (BMD) system level and other test events. Support BMDS Elements in planning and execution of their program specific Flight Test events. Support BMD System Engineering and Warfighter requirements and integration of multiple Elements, Operational Test Agency (OTA) and test support team into BMDS system flight and ground tests. Initiate planning for FY 2012 BMDS system level and other test events.</p> <p>** CECs/EMEs are the conditions and events where data is obtained from flight and ground tests in order to anchor system models and simulations.</p> <p>Refine scenario designs for BMDS flight tests to support Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs) identified in BMDS Integrated Master Test Plan (IMTP).</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Data Management See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Project YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Project YX04.</p> <p><i>FY 2011 Base Plans:</i> Assess processes and metrics that support readiness to test. Identify options for processes that are missing or deficient.</p>	0.000	0.000	23.710	0.000	23.710

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Track issues to ensure processes are developed and implemented where needed. Develop MDA test program Risk Management Standardization. Establish test lessons learned process to enable organizational learning. Establish additional Test Readiness Improvement Teams (TRITs) as needed. Develop a Test Readiness Assessment Dashboard View and Process to produce reports assessing overall Test Readiness. Develop and codify operational test training to qualify personnel (trainers, evaluators, and operators/ crews) in test operations. Develop truth plans for ground and flight tests as well as post-flight reconstruction. Deliver truth data products such as Truth Data Packages, Best Estimated Trajectories (BETs), Truth Summit Compilations, and executive-level brief inputs. Provide centralized data management, archival and distribution services to reduce the risks and costs of BMDS Development and Fielding. The Data Centers comprise MDA's official archive for all MDA mission related scientific and technical data.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Test Resources See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Project YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Project YX04.</p>	0.000	0.000	282.634	0.000	282.634

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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 2011 Base Plans:</i></p> <p>Develop, maintain, integrate and upgrade MDA unique range facilities and instrumentation at the following ranges in accordance with the Department of Defense Financial Management Regulation: White Sands Missile Range (WSMR), Naval Air Warfare Center (NAWC), Kauai Test Facility (KTF), Wake Island, Pacific Missile Range Facility (PMRF), Reagan Test Site (RTS), Vandenberg Air Force Base (VAFB), Kodiak Launch Complex (KLC), and other test sites as required.</p> <p>Operate High Altitude Observatory II (HALO), HALO-III, Wide-body Airborne Sensor Program (WASP), HALO-I for data collection services of Ballistic Missile Defense (BMD) Flight Test.</p> <p>Maintain and upgrade MDA unique Ground Test Facilities to support all the BMDS developmental program hardware and software testing. These facilities provide hardware in the loop capability, threat signature measurement capability, and sensor calibration standards.</p> <p>Continue to maintain and upgrade MDA unique Ground Test Facilities to support BMDS system-level Ground Tests, including basic Ground Test Control as well as some Element representations. Expand System Ground Test Infrastructure to include new (and some multiple) Element representations and capabilities (such as concurrent test, training, and integration).</p> <p>Use the Pacific Range Support Team (PRST) to provide efficient planning, coordination and management of range resources and infrastructure in support of BMDS Flight Testing throughout the Pacific Test bed.</p> <p>Continue coordinating with the Targets Program to develop and qualify common Flight Termination and Range Tracking Systems that will simplify target integration at the ranges.</p> <p>Provide for continued development and operations of the Telemetry and Instrumentation Ship to support off-range BMDS testing and increasingly complex test scenarios.</p> <p>Continue to operate three Transportable Telemetry System (TTS) that provides long range missile telemetry acquisition, processing and archiving capability.</p> <p>Continue support of the Test and Evaluation Data Analysis Center (TEDAC) to provide test communications among the MDA ranges and test situational awareness to MDA.</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>Provide for continued operations of the X-Band Transportable Radar (XTR-1), hosted on the Pacific Tracker, to support off-range BMDS RDT&E testing and increasingly complex test scenarios. Make focused investments in the BMDS test infrastructure to support the Integrated Master Test Plan (IMTP). Develop the flight test infrastructure and Ground-based Midcourse Defense (GMD) salvo test-unique modifications to support GMD salvo flight testing from VAFB. Develop additional telemetry and flight safety instrumentation to support increasingly complex flight test scenarios. Develop dedicated C2BMC regional test bed and communication nodes to support IMTP flight test program Initiate improvements to the existing BMDS hardware in the loop capability and initiate development of the second BMDS Hardware in the Loop string, including improvements to the model and simulation validation and verification lab.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Engineering Test Analysis See Description Below</p> <p><i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Projects WX04 and YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Projects WX04 and YX04.</p>		0.000	0.000	39.639	0.000	39.639

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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 2011 Base Plans:</i></p> <p>The Ballistic Missile Defense System (BMDS) Capability Assessment team (BCAT) team will continue to update the non-advocate assessment of the BMDS readiness and investigates BMDS performance issues and propose mitigation plans. The BCAT Team will also assess model fidelity based on test events that are reconstructed digitally and compared to mission day results for events in the Integrated Master Test Plan (IMTP).</p> <p>Target certification will be conducted. Target certification assures that a target recommended for certification meets the mission and test objectives with the target characteristics identified for that test event. The Target Accreditation Report, the basis for certification, compares the target’s capabilities against the capabilities required by the BMDS Target Requirements Document and the test event described in the IMTP.</p> <p>Perform system-level analysis and interoperability analysis on all BMDS test events listed in the IMTP. Develop Analysis Execution Plans (AEP) and final Test Analysis Reports (TAR) for BMDS test events listed in the IMTP.</p> <p>Lead Joint Analysis Teams (JAT) for BMDS test events listed in the IMTP.</p> <p>Develop, deliver, and brief Quick Look Brief (QLB), Executive QLB (EQLB), Mission Data Review (MDR), and Executive MDR (EMDR) for BMDS test events listed in the IMTP.</p> <p>Incorporate software changes to Modular Analysis and Reporting Suite (MARS) to enhance analyst efficiency and capability.</p> <p>Continue to populate the MARS Analysis Database with most current test data to support analysis and capability assessments.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Concurrent Test, Training and Operations</p> <p>See Description Below</p>	0.000	0.000	51.419	0.000	51.419

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>				
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> FY 2009 accomplishments are captured in Budget Project XX04</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Projects XX04 and YX04</p> <p><i>FY 2011 Base Plans:</i> Begin integration of Element delivered implementations Monitor and coordinate the execution of Agency Modeling and Simulation development efforts; key dependencies for the successful execution of CTTO Operate and sustain Distributed Multi-Echelon System (DMETS) training and exercise suites and associated hardware and software at 80 hours per week Continue providing BMD training events across the Unified Combatant Commands while maintaining the existing architecture. Continue to upgrade DMETS to mirror the deployed systems. Includes technical refresh. Expand training enhancements (e.g. dynamic scenarios emulating enemy mobile launchers, constructive (manned) element simulations, and initial crew assessment tools) and cross mission training. Continue to expand training audience to include regional and theater training Improve training operations tools which provide better training system reliability and automated asset management Integrate evolving Agency modeling and simulation development efforts Continue to upgrade DMETS to mirror the deployed systems, including technical refresh Continue to expand training audience to include regional and theater training Expand training enhancements (e.g. dynamic scenarios emulating enemy mobile launchers, constructive (manned) element simulations, and initial crew assessment tools) and cross mission training Improve training operations tools which provide better training system reliability and automated asset management.</p>						

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Integrate evolving Agency modeling and simulation development efforts <i>FY 2011 OCO Plans:</i> NA						
Fielding and Integration See Description Below <i>FY 2009 Accomplishments:</i> FY 2009 accomplishments are captured in Budget Project YX04. <i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Project YX04. <i>FY 2011 Base Plans:</i> Continue Ballistic Missile Defense System (BMDS) integration planning and capability delivery execution (CD-04). Manage BMDS Schedule Baseline. Update BMDS Baseline documentation. Support Decision Support System acquisition activities and implementation. Continue to execute the BMDS Change Management process. <i>FY 2011 OCO Plans:</i> NA		0.000	0.000	9.110	0.000	9.110
Facilities Siting, and Environmental See Description Below		0.000	0.000	3.901	0.000	3.901

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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> FY 2009 accomplishments are captured in Budget Project YX04.</p> <p><i>FY 2010 Plans:</i> FY 2010 plans are captured in Budget Project YX04.</p> <p><i>FY 2011 Base Plans:</i> Support MDA Military Construction (MILCON) planning and programming. Provide oversight for real property acquisition of the MILCON 2005 Defense Base Closure and Realignment and RDT&E construction programs. Continue Support operations and maintenance of MDA-assigned facilities at test and operational locations worldwide, to include Aegis Ashore and potential transfer of Kauai Test Facility from Department of Energy to the Department of Defense. Support construction for scheduled Ballistic Missile Defense System (BMDS) test campaigns, to include Reagan Test Site, Pacific Missile Range Facility (PMRF), Vandenberg Air Force Base (VAFB), Pt. Mugu, and Wake Island. Support site survey and bed-down approval process, launch facilities designs, and award of construction contracts. Use MDA`s Strategic Plan for Environmental Management to manage and execute MDA`s environmental activities and assets in a proactive and environmentally sound manner. Ensure environmental compliance with all applicable U.S. laws and regulations, DoD and Service regulations and policies, Executive Orders, binding international agreements, host-nation requirements, and other requirements that seek to preserve, protect, or enhance human health and/or the environment across all MDA operations and activities. Plan, program, and budget to achieve, monitor, and maintain compliance in accordance with environmental laws. Integrate environmental factors, issues, and values in MDA`s acquisition decision-making process to mitigate risk to cost, schedule, and performance while protecting the environment.</p>								

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Promote awareness and understanding of environmental management in all phases of MDA's acquisition mission and provide appropriate training to all MDA personnel. Conduct required Agency reporting on environmental liabilities and environmental expenditures. <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	559.133	0.000	559.133

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
• 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
• 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

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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

The Directorate for Test acquisition strategy is consistent with the MDA capabilities based acquisition strategy that emphasizes testing, evolutionary acquisition, and knowledge based funding. The Directorate for Test directs a team of various internal staff (Government and Scientific, Engineering and Technical Assistance support), executing agents, including DoD agencies, Service Organizations, Laboratories and Program Offices, Federally Funded Research and Development Center (FFRDC), and other MDA programs to execute the various diverse efforts within the Ballistic Missile Defense System (BMDS) test program through competition. When a specific effort/activity being conducted, acquired, or maintained, requires the use of an executing agent the acquisition strategy that conform to their respective headquarters regulations are used. This combination of organizations forms an integrated team to accomplish the necessary testing for BMDS.

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 (AA&S) approach to support the 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. The Directorate for Test will recomplete contracts in accordance with the MDA's MiDAESS initiative.

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E. Performance Metrics

NA

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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
Engineering Test Analysis BMDS Capability Assessment Team MD04	Various/ Various	Various NJ, CO, MD, VA	0.000	0.000		10.134	Oct 2010	0.000		10.134	Continuing	Continuing	Continuing
Engineering Test Analysis Target Certification MD04	Various/ Various	USASMDC Huntsville, AL	0.000	0.000		0.699	Oct 2010	0.000		0.699	Continuing	Continuing	Continuing
Engineering Test Analysis Joint Analysis Team MD04	Various/ Various	Various Various	0.000	0.000		28.806	Oct 2010	0.000		28.806	Continuing	Continuing	Continuing
Concurrent Test, Training and Operations DMETS MD04	C/CPAF	Various Various	0.000	0.000		27.766		0.000		27.766	Continuing	Continuing	Continuing
	C/CPAF	Various Various	0.000	0.000		23.653	Oct 2010	0.000		23.653	Continuing	Continuing	Continuing

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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			
Concurrent Test, Training and Operations CTTO MD04													
Fielding and Integration Support Contracts MD04	C/CPAF	Computer Sciences Corp. Falls Church, VA	0.000	0.000		9.110	Oct 2010	0.000		9.110	Continuing	Continuing	Continuing
Facilities Siting, and Environmental Support Contracts MD04	Various/ Various	Various Various	0.000	0.000		3.901	Oct 2010	0.000		3.901	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		104.069		0.000		104.069			

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			
Test Policy, Budget and Functional Management Operational Test Agency Participation in System Test MD04	Various/ Various	OTAs Various	0.000	0.000		18.510	Oct 2010	0.000		18.510	Continuing	Continuing	Continuing
		NA	0.000	0.000		16.315	Oct 2010	0.000		16.315	Continuing	Continuing	Continuing

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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			
Test Policy, Budget and Functional Management T&E Government Salaries MD04	Various/ Various	Washington, DC											
Test Policy, Budget and Functional Management Support Contracts MD04	C/FFP	TASC, Sparta Arlington, VA	0.000	0.000		8.513	Oct 2010	0.000		8.513	Continuing	Continuing	Continuing
Test Policy, Budget and Functional Management T&E Travel MD04	Various/ Various	NA Washington, DC	0.000	0.000		1.361	Oct 2010	0.000		1.361	Continuing	Continuing	Continuing
Test Planning and Design Test Planning and Design MD04	Various/ Various	Various Various	0.000	0.000		5.058	Oct 2010	0.000		5.058	Continuing	Continuing	Continuing
Test Planning and Design Support Contracts MD04	Various/ Various	Various Various	0.000	0.000		7.570	Oct 2010	0.000		7.570	Continuing	Continuing	Continuing
Test Operations, Mission Management and Integration BMDS Flight Test MD04	Various/ Various	USASMDC, WSMR, MITLL, MDIOC & VAFB AL, NM, MA, HI & CA	0.000	0.000		8.671	Oct 2010	0.000		8.671	Continuing	Continuing	Continuing
Test Operations, Mission Management and Integration BMDS Ground Test MD04	Various/ Various	MDIOC, Various CO, CA, AL, VA & MA	0.000	0.000		64.796	Oct 2010	0.000		64.796	Continuing	Continuing	Continuing
Test Operations, Mission Management and	Various/ Various	Various Various	0.000	0.000		0.882	Oct 2010	0.000		0.882	Continuing	Continuing	Continuing

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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			
Integration Third Site Testing MD04													
Test Operations, Mission Management and Integration Support Contracts MD04	C/FFP	TASC, Sparta, RND Various	0.000	0.000		17.044	Oct 2010	0.000		17.044	Continuing	Continuing	Continuing
Test Data Management Continuous Process Improvement MD04	Various/ Various	Various Various	0.000	0.000		2.280	Oct 2010	0.000		2.280	Continuing	Continuing	Continuing
Test Data Management Independent Assessment MD04	Various/ Various	Various Various	0.000	0.000		1.589	Oct 2010	0.000		1.589	Continuing	Continuing	Continuing
Test Data Management Support Contracts MD04	C/FFP	TASC, Sparta Arlington, VA	0.000	0.000		3.942	Oct 2010	0.000		3.942	Continuing	Continuing	Continuing
Test Data Management Data Centers MD04	Various/ Various	Various TN, CO, AL, CA	0.000	0.000		15.899		0.000		15.899	Continuing	Continuing	Continuing
Test Resources Ground Test Facilities MD04	Various/ Various	Army, Air Force AL, FL, MD, TN	0.000	0.000		104.202	Oct 2010	0.000		104.202	Continuing	Continuing	Continuing
Test Resources Ranges and Instrumentation MD04	Various/ Various	Various CA, HI, NM, Marshall Islands, AK	0.000	0.000		130.189	Oct 2010	0.000		130.189	Continuing	Continuing	Continuing
Test Resources Airborne Sensors MD04	C/C/PAF	L3 Communications OK, RTSC, CA	0.000	0.000		27.711	Oct 2010	0.000		27.711	Continuing	Continuing	Continuing
	C/FFP		0.000	0.000		20.532	Oct 2010	0.000		20.532	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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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			
Test Resources Support Contracts MD04		Northrop Grumman Arlington, VA											
Subtotal			0.000	0.000		455.064		0.000		455.064			

Remarks
NA

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

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	0.000	559.133	0.000	559.133		

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>			PROJECT MD04: <i>Test Program</i>			
	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-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
AST-14 (Israeli Cooperative Intercept Flight Test)											█																	
AST-15 (Israeli Cooperative Intercept Flight Test)															█													
AST-16 (Israeli Cooperative Intercept Flight Test)																				█								
BVT-01 (Two Stage Booster Flight Test)							█																					
CTV-1 (Aegis Interceptor Only Test)																				█								
CTV-2 (Aegis Interceptor Only Test)																								█				
Caravan 3 (USFT-5) (Israeli Program Intercept Flight Test)																												█
Caravan 3 (USFT-6) (Israeli Program Intercept Flight Test)																												█
EPOCH-1 (Aegis/THAAD/Patriot Multiple Engagement Flight Test)																				█								
EPOCH-2 (GMD/Aegis/THAAD/Patriot Multiple Engagement Flight Test)																												█
FTG-08 (GMD Intercept Flight Test)															█													
FTG-09 (GMD Salvo Flight Test)											█																	
FTG-11 (GMD Intercept Flight Test)																								█				
FTM-15 (Aegis Intercept Flight Test)											█																	
											█																	

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
FTM-16 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept)																												
FTM-18 (Aegis Intercept Flight Test)														■														
FTM-19 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept)													■															
FTM-20 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept), E3 (Simulated Intercept)														■														
FTM-21 (Aegis Intercept Flight Test)																			■									
FTM-22 (Aegis Intercept Flight Test)																				■								
FTM-23 (Aegis Flight Test) E1 (Salvo), E2 and E3 (Intercept)																					■							
FTS-02 (STSS Demonstrator Flight Test)																						■						
FTT-13 (THAAD Intercept Flight Test)											■																	
FTT-14 (THAAD Intercept Flight Test)												■																
FTT-15 (THAAD Intercept Flight Test)													■															
FTT-16 (THAAD Intercept Flight Test)																					■							
FTT-17 (THAAD Intercept Flight Test)																						■						
FTT-18 (THAAD Intercept Flight Test)																							■					
FTT-19 (THAAD Intercept Flight Test)																									■			
FTX-12 (UEWR Tracking Test)																												
FTX-13 (GMD Risk Reduction Flight)																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
PTV-1 (Aegis Interceptor Only Test)																																
Patriot 7-3 (Patriot Multiple Simultaneous Engagement)																																
SFTM-1 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Interceptor Only)																																
SFTM-2 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Non Intercept)																																

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
AST-14 (Israeli Cooperative Intercept Flight Test)	2	2011	2	2011
AST-15 (Israeli Cooperative Intercept Flight Test)	1	2013	1	2013
AST-16 (Israeli Cooperative Intercept Flight Test)	1	2014	1	2014
BVT-01 (Two Stage Booster Flight Test)	3	2010	3	2010
CTV-1 (Aegis Interceptor Only Test)	2	2014	2	2014
CTV-2 (Aegis Interceptor Only Test)	4	2014	4	2014
Caravan 3 (USFT-5) (Israeli Program Intercept Flight Test)	4	2015	4	2015
Caravan 3 (USFT-6) (Israeli Program Intercept Flight Test)	4	2015	4	2015
EPOCH-1 (Aegis/THAAD/Patriot Multiple Engagement Flight Test)	4	2013	4	2013
EPOCH-2 (GMD/Aegis/THAAD/Patriot Multiple Engagement Flight Test)	3	2015	3	2015
FTG-08 (GMD Intercept Flight Test)	4	2012	4	2012
FTG-09 (GMD Salvo Flight Test)	3	2011	3	2011
FTG-11 (GMD Intercept Flight Test)	4	2014	4	2014
FTM-15 (Aegis Intercept Flight Test)	3	2011	3	2011
FTM-16 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept)	2	2011	2	2011
FTM-18 (Aegis Intercept Flight Test)	3	2012	3	2012
FTM-19 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept)	1	2012	1	2012
FTM-20 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Intercept), E3 (Simulated Intercept)	3	2012	3	2012

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
FTM-21 (Aegis Intercept Flight Test)	2	2013	2	2013
FTM-22 (Aegis Intercept Flight Test)	3	2013	3	2013
FTM-23 (Aegis Flight Test) E1 (Salvo), E2 and E3 (Intercept)	4	2013	4	2013
FTS-02 (STSS Demonstrator Flight Test)	1	2014	1	2014
FTT-13 (THAAD Intercept Flight Test)	2	2011	2	2011
FTT-14 (THAAD Intercept Flight Test)	4	2011	4	2011
FTT-15 (THAAD Intercept Flight Test)	2	2012	2	2012
FTT-16 (THAAD Intercept Flight Test)	2	2013	2	2013
FTT-17 (THAAD Intercept Flight Test)	1	2014	1	2014
FTT-18 (THAAD Intercept Flight Test)	3	2014	3	2014
FTT-19 (THAAD Intercept Flight Test)	1	2015	1	2015
FTX-12 (UEWR Tracking Test)	2	2013	2	2013
FTX-13 (GMD Risk Reduction Flight)	3	2014	3	2014
FTX-15 (ECM Test Flight)	1	2015	1	2015
GTD-04 (Full BMDS Distributed Test)	2	2012	2	2012
GTD-05 (Full BMDS Distributed Test)	3	2014	3	2014
GTD-06 (Full BMDS Distributed Test)	3	2015	3	2015
GTI-04 (EXE) (Full BMDS HWIL Test)	4	2011	4	2011
GTI-04 (INT) (Full BMDS HWIL Test)	3	2011	3	2011
GTI-05 (EXE) (Full BMDS HWIL Test)	1	2014	1	2014

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD04: <i>Test Program</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
GTI-05 (INT) (Full BMDS HWIL Test)	3	2013	3	2013
GTI-06 (EXE) (Full BMDS HWIL Test)	2	2015	2	2015
GTI-06 (INT) (Full BMDS HWIL Test)	4	2014	4	2014
GTX-04d (Full BMDS HWIL Test)	1	2011	1	2011
GTX-04e (Regional Focused HWIL Test)	3	2011	3	2011
GTX-05a (Regional Focused HWIL Test)	4	2012	4	2012
GTX-05b (Strategic Focused HWIL Test)	1	2013	1	2013
GTX-06a (BMDS Focused HWIL Test)	3	2013	3	2013
GTX-06b (BMDS Focused HWIL Test)	4	2013	4	2013
GTX-06c (BMDS Focused HWIL Test)	2	2014	2	2014
HWIL Contingency Test	4	2015	4	2015
JFTM-04 E1, E2 (Japanese Cooperative Aegis Track Ex/US Sim Engagement)	1	2011	1	2011
PTV-1 (Aegis Interceptor Only Test)	1	2014	1	2014
Patriot 7-3 (Patriot Multiple Simultaneous Engagement)	1	2011	1	2011
SFTM-1 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Interceptor Only)	1	2015	1	2015
SFTM-2 (Aegis Flight Test) E1 (Simulated Intercept), E2 (Non Intercept)	2	2015	2	2015

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</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
BX05: <i>Targets & Countermeasures Supports Block 2.0</i>	86.168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	86.168
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2009 BX05 funding transitioned to the Targets and Countermeasures Program Element.

Starting in FY 2010 BX05 funding transitioned to YX05 project.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Targets and Countermeasures Supports Block 2.0 See Description Below	86.168	0.000	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>

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></p> <p>Funding for this effort supports flight tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Completed target hardware build and integration for the following target types:</p> <p>1 Foreign Materiel Acquisition (FMA) 1 Short Range Air Launch Targets (SRALT) Long Range Air Launch Target (LRALT)</p> <p>Conducted mission planning and range coordination activity, executed target mission, and collected and analyzed target system data for ;4 missions:</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Flight tests for Terminal High Altitude Area Defense (THAAD) Interceptors (1)</p> <p>FTT-10a Flight tests for Aegis Interceptors (2)</p> <p>Stellar Daggers JFTM-2 E2 Flight test with Arrow Interceptors (1)</p> <p>FTA-03 Conducted mission planning and range coordination activity for 3 missions:</p> <p>FTT-11 FTA-04a FTA-04b Initiated and/or continued target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <p>2 Enhanced Long Range Air Launch Targets (E-LRALT) 1 Short Range Air Launch Target (SRALT) 1 Medium Range Target (MRT) Provided quality assurance and mission assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</p> <p><i>FY 2010 Plans:</i> NA</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	86.168	0.000	0.000	0.000	0.000

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
• 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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
<p>In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3 Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.</p> <p>Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.</p> <p>Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.</p> <p>As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.</p> <p>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.</p>		

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	BX05: <i>Targets & Countermeasures Supports Block 2.0</i>

E. Performance Metrics

NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 1 BX05	C/CPAF	Lockheed Martin Denver, CO	26.583	0.000		0.000		0.000		0.000	0	26.583	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 2 BX05	C/FFP	Coleman Aerospace Orlando, FL	21.650	0.000		0.000		0.000		0.000	0	21.650	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 3 BX05	TBD/TBD	Naval Air Warfare Center Port Hueneme White Sands, NM	0.022	0.000		0.000		0.000		0.000	0	0.022	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 4 BX05	C/FFP	Northrop Grumman Albuquerque, NM	4.917	0.000		0.000		0.000		0.000	0	4.917	Continuing
	TBD/TBD		1.614	0.000		0.000		0.000		0.000	0	1.614	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 5 BX05		Pacific Missile Range and Facility Barking Sands, HI											
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 6 BX05	TBD/TBD	Defense Finance and Accounting Service Indianapolis, IN	7.878	0.000		0.000		0.000		0.000	0	7.878	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 7 BX05	C/FFP	Teledyne Solutions Huntsville, AL	0.305	0.000		0.000		0.000		0.000	0	0.305	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 8 BX05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.233	0.000		0.000		0.000		0.000	0	0.233	Continuing
	TBD/TBD	Aerospace	1.241	0.000		0.000		0.000		0.000	0	1.241	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 9 BX05		Los Angeles, CA											
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 10 BX05	TBD/TBD	NAWC-WD Albuquerque, NM	4.508	0.000		0.000		0.000		0.000	0	4.508	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 11 BX05	TBD/TBD	RTS China Lake, CA	4.580	0.000		0.000		0.000		0.000	0	4.580	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 12 BX05	TBD/TBD	NAWC-PAX Kwajalein, Marshall Islands	4.581	0.000		0.000		0.000		0.000	0	4.581	Continuing
	TBD/TBD	RTTC	0.897	0.000		0.000		0.000		0.000	0	0.897	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 13 BX05		Redstone Arsenal, AL											
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 14 BX05	TBD/TBD	309th Missile Maintenance Wing Hill AFB, UT	0.923	0.000		0.000		0.000		0.000	0	0.923	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 15 BX05	TBD/TBD	USAF Research Labs Wright-Patterson AFB, OH	0.764	0.000		0.000		0.000		0.000	0	0.764	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 16 BX05	TBD/TBD	USAF Air Mobility Scott AFB, IL	5.106	0.000		0.000		0.000		0.000	0	5.106	Continuing
	TBD/TBD	YUMA	1.193	0.000		0.000		0.000		0.000	0	1.193	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 17 BX05		Yuma, AZ											
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 18 BX05	TBD/TBD	MSI Hollister, CA	0.191	0.000		0.000		0.000		0.000	0	0.191	Continuing
Targets and Countermeasures Supports Block 2.0 Targets and Countermeasures Support Block 2 - 19 BX05	TBD/TBD	NSWC-DD Dahlgren, VA	0.095	0.000		0.000		0.000		0.000	0	0.095	Continuing
Subtotal			87.281	0.000		0.000		0.000		0.000	0.000	87.281	

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT BX05: <i>Targets & Countermeasures Supports Block 2.0</i>
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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			
Remarks NA													
			Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract			
Project Cost Totals			87.281	0.000	0.000	0.000	0.000	0.000	87.281				

Remarks
NA

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				CX05: <i>Targets & Countermeasures Supports Block 3.0</i>				
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
CX05: <i>Targets & Countermeasures Supports Block 3.0</i>	43.277	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	43.277
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2009 CX05 funding transitioned to the Targets and Countermeasures Program Element.

Starting in FY 2010 CX05 funding transitioned to YX05 project.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Targets and Countermeasures support Block 3.0 See Description Below	43.277	0.000	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>				
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></p> <p>Funding for this effort supports flight tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Completed target hardware build and integration for the following target types:</p> <p>1 Strategic Target System (STARS) 1 Launch Vehicle (LV-2) Conducted mission planning and range coordination activity, executed target mission, and collected and analyzed target system data for one flight test with Ground Missile Defense (GMD) Interceptors</p>								

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FTG-05 Conducted mission planning and range coordination activity for one mission with Ground Missile Defense (GMD) Interceptors: FTG-06 Initiated and/or continued target hardware development, target integration, mission planning, and range coordination for future missions of the following target types: 1 Launch Vehicle (LV-2) Provided Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	43.277	0.000	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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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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 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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>				
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>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).

In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3 Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
<p>Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.</p> <p>Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.</p> <p>As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.</p> <p>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.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 1 CX05	C/CPAF	Lockheed Martin Space Systems Denver, CO	15.277	0.000		0.000		0.000		0.000	0	15.277	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 2 CX05	TBD/TBD	Sandia National Labs Albuquerque, NM	8.051	0.000		0.000		0.000		0.000	0	8.051	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 3 CX05	C/FFP	Northrop Grumman Space Systems Albuquerque, NM	0.448	0.000		0.000		0.000		0.000	0	0.448	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 4 CX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	1.096	0.000		0.000		0.000		0.000	0	1.096	Continuing
	TBD/TBD		2.975	0.000		0.000		0.000		0.000	0	2.975	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 5 CX05		Defense Finance & Accounting Service Indianapolis, IN											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 6 CX05	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.112	0.000		0.000		0.000		0.000	0	0.112	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 7 CX05	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	0.704	0.000		0.000		0.000		0.000	0	0.704	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 8 CX05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.105	0.000		0.000		0.000		0.000	0	0.105	Continuing
	TBD/TBD		0.113	0.000		0.000		0.000		0.000	0	0.113	Continuing

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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 9 CX05		Naval Surface Warfare Center Crane, IN											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 10 CX05	TBD/TBD	Ronald Reagan BMD Test Site Kwajalein, Marshall Islands	2.972	0.000		0.000		0.000		0.000	0	2.972	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 11 CX05	TBD/TBD	Alaska Aerospace Development Corporation Kodiak Island, AK	1.103	0.000		0.000		0.000		0.000	0	1.103	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 12 CX05	C/CPAF	Coleman Aerospace Orlando, FL	10.003	0.000		0.000		0.000		0.000	0	10.003	Continuing
	TBD/TBD		0.010	0.000		0.000		0.000		0.000	0	0.010	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 13 CX05		Missile Defense Data Center US Army SMDC Albuquerque, NM											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 14 CX05	TBD/TBD	Defense Information Systems Agency Scott AFB, IL	0.283	0.000		0.000		0.000		0.000	0	0.283	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 15 CX05	TBD/TBD	Aerospace Los Angeles, CA	0.568	0.000		0.000		0.000		0.000	0	0.568	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 16 CX05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.022	0.000		0.000		0.000		0.000	0	0.022	Continuing
	TBD/TBD	Hanscom AFB	0.163	0.000		0.000		0.000		0.000	0	0.163	Continuing

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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 17 CX05		Bedford, MA											
Subtotal			44.005	0.000		0.000		0.000		0.000	0.000	44.005	

Remarks

NA

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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 1 CX05	C/CPAF	Lockheed Martin Space Systems Denver, CO	15.277	0.000		0.000		0.000		0.000	0	15.277	Continuing
Targets and Countermeasures	TBD/TBD	Sandia National Labs	8.051	0.000		0.000		0.000		0.000	0	8.051	Continuing

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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			
support Block 3.0 Targets and Countermeasures Support Block 3 - 2 CX05		Albuquerque, NM											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 3 CX05	C/FFP	Northrop Grumman Space Systems Albuquerque, NM	0.448	0.000		0.000		0.000		0.000	0	0.448	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 4 CX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	1.096	0.000		0.000		0.000		0.000	0	1.096	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 5 CX05	TBD/TBD	Defense Finance & Accounting Service Indianapolis, IN	2.975	0.000		0.000		0.000		0.000	0	2.975	Continuing
Targets and Countermeasures support Block	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.112	0.000		0.000		0.000		0.000	0	0.112	Continuing

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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			
3.0 Targets and Countermeasures Support Block 3 - 6 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 7 CX05	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	0.704	0.000		0.000		0.000		0.000	0	0.704	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 8 CX05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.105	0.000		0.000		0.000		0.000	0	0.105	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 9 CX05	TBD/TBD	Naval Surface Warfare Center Crane, IN	0.113	0.000		0.000		0.000		0.000	0	0.113	Continuing
Targets and Countermeasures support Block 3.0 Targets and	TBD/TBD	Ronald Reagan BMD Test Site Kwajalein, Marshall Islands	2.972	0.000		0.000		0.000		0.000	0	2.972	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</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			
Countermeasures Support Block 3 - 10 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 11 CX05	TBD/TBD	Alaska Aerospace Development Corporation Kodiak Island, AK	1.103	0.000		0.000		0.000		0.000	0	1.103	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 12 CX05	C/CPAF	Coleman Aerospace Orlando, FL	10.003	0.000		0.000		0.000		0.000	0	10.003	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 13 CX05	TBD/TBD	Missile Defense Data Center US Army SMDC Albuquerque, NM	0.010	0.000		0.000		0.000		0.000	0	0.010	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures	TBD/TBD	Defense Information Systems Agency Scott AFB, IL	0.283	0.000		0.000		0.000		0.000	0	0.283	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</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			
Support Block 3 - 14 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 15 CX05	TBD/TBD	Aerospace Los Angeles, CA	0.568	0.000		0.000		0.000		0.000	0	0.568	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 16 CX05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.022	0.000		0.000		0.000		0.000	0	0.022	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 17 CX05	TBD/TBD	Hanscom AFB Bedford, MA	0.163	0.000		0.000		0.000		0.000	0	0.163	Continuing
Subtotal			44.005	0.000		0.000		0.000		0.000	0.000	44.005	

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 1 CX05	C/CPAF	Lockheed Martin Space Systems Denver, CO	15.277	0.000		0.000		0.000		0.000	0	15.277	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 2 CX05	TBD/TBD	Sandia National Labs Albuquerque, NM	8.051	0.000		0.000		0.000		0.000	0	8.051	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 3 CX05	C/FFP	Northrop Grumman Space Systems Albuquerque, NM	0.448	0.000		0.000		0.000		0.000	0	0.448	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 4 CX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	1.096	0.000		0.000		0.000		0.000	0	1.096	Continuing
	TBD/TBD		2.975	0.000		0.000		0.000		0.000	0	2.975	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 5 CX05		Defense Finance & Accounting Service Indianapolis, IN											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 6 CX05	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.112	0.000		0.000		0.000		0.000	0	0.112	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 7 CX05	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	0.704	0.000		0.000		0.000		0.000	0	0.704	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 8 CX05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.105	0.000		0.000		0.000		0.000	0	0.105	Continuing
	TBD/TBD		0.113	0.000		0.000		0.000		0.000	0	0.113	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 9 CX05		Naval Surface Warfare Center Crane, IN											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 10 CX05	TBD/TBD	Ronald Reagan BMD Test Site Kwajalein, Marshall Islands	2.972	0.000		0.000		0.000		0.000	0	2.972	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 11 CX05	TBD/TBD	Alaska Aerospace Development Corporation Kodiak Island, AK	1.103	0.000		0.000		0.000		0.000	0	1.103	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 12 CX05	C/CPAF	Coleman Aerospace Orlando, FL	10.003	0.000		0.000		0.000		0.000	0	10.003	Continuing
	TBD/TBD		0.010	0.000		0.000		0.000		0.000	0	0.010	Continuing

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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 13 CX05		Missile Defense Data Center US Army SMDC Albuquerque, NM											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 14 CX05	TBD/TBD	Defense Information Systems Agency Scott AFB, IL	0.283	0.000		0.000		0.000		0.000	0	0.283	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 15 CX05	TBD/TBD	Aerospace Los Angeles, CA	0.568	0.000		0.000		0.000		0.000	0	0.568	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 16 CX05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.022	0.000		0.000		0.000		0.000	0	0.022	Continuing
	TBD/TBD	Hanscom AFB	0.163	0.000		0.000		0.000		0.000	0	0.163	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 17 CX05		Bedford, MA											
Subtotal			44.005	0.000		0.000		0.000		0.000	0.000	44.005	

Remarks

NA

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			
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 1 CX05	C/CPAF	Lockheed Martin Space Systems Denver, CO	15.277	0.000		0.000		0.000		0.000	0	15.277	Continuing
Targets and Countermeasures	TBD/TBD	Sandia National Labs	8.051	0.000		0.000		0.000		0.000	0	8.051	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
support Block 3.0 Targets and Countermeasures Support Block 3 - 2 CX05		Albuquerque, NM											
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 3 CX05	C/FFP	Northrop Grumman Space Systems Albuquerque, NM	0.448	0.000		0.000		0.000		0.000	0	0.448	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 4 CX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	1.096	0.000		0.000		0.000		0.000	0	1.096	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 5 CX05	TBD/TBD	Defense Finance & Accounting Service Indianapolis, IN	2.975	0.000		0.000		0.000		0.000	0	2.975	Continuing
Targets and Countermeasures support Block	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.112	0.000		0.000		0.000		0.000	0	0.112	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
3.0 Targets and Countermeasures Support Block 3 - 6 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 7 CX05	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	0.704	0.000		0.000		0.000		0.000	0	0.704	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 8 CX05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.105	0.000		0.000		0.000		0.000	0	0.105	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 9 CX05	TBD/TBD	Naval Surface Warfare Center Crane, IN	0.113	0.000		0.000		0.000		0.000	0	0.113	Continuing
Targets and Countermeasures support Block 3.0 Targets and	TBD/TBD	Ronald Reagan BMD Test Site Kwajalein, Marshall Islands	2.972	0.000		0.000		0.000		0.000	0	2.972	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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			
Countermeasures Support Block 3 - 10 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 11 CX05	TBD/TBD	Alaska Aerospace Development Corporation Kodiak Island, AK	1.103	0.000		0.000		0.000		0.000	0	1.103	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 12 CX05	C/CPAF	Coleman Aerospace Orlando, FL	10.003	0.000		0.000		0.000		0.000	0	10.003	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 13 CX05	TBD/TBD	Missile Defense Data Center US Army SMDC Albuquerque, NM	0.010	0.000		0.000		0.000		0.000	0	0.010	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures	TBD/TBD	Defense Information Systems Agency Scott AFB, IL	0.283	0.000		0.000		0.000		0.000	0	0.283	Continuing

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

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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			
Support Block 3 - 14 CX05													
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 15 CX05	TBD/TBD	Aerospace Los Angeles, CA	0.568	0.000		0.000		0.000		0.000	0	0.568	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 16 CX05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.022	0.000		0.000		0.000		0.000	0	0.022	Continuing
Targets and Countermeasures support Block 3.0 Targets and Countermeasures Support Block 3 - 17 CX05	TBD/TBD	Hanscom AFB Bedford, MA	0.163	0.000		0.000		0.000		0.000	0	0.163	Continuing
Subtotal			44.005	0.000		0.000		0.000		0.000	0.000	44.005	

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT CX05: <i>Targets & Countermeasures Supports Block 3.0</i>
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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
Project Cost Totals	176.020	0.000	0.000	0.000	0.000	0.000	176.020	

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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</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
WX05: <i>Targets & Countermeasures Supports Capability Development</i>	29.587	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	29.587
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2009 WX05 funding transitioned to the Targets and Countermeasures Program Element.

Starting in FY 2010 WX05 funding transitioned to YX05 project.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Targets and Countermeasures supports the BMDS Capability Development	29.587	0.000	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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>				
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> Funding for this effort supports flight tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Completed target hardware build and integration for the following target types:</p> <p>3 Foreign Materiel Acquisitions (FMA) Conducted mission planning and range coordination activity, executed target mission, and collected and analyzed target system data for ;1 missions:</p>								

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Flight tests for Air Borne Laser (ABL) (1)</p> <p>ABL-01 Conducted mission planning and range coordination activity for ;2 missions:</p> <p>FTL-01 FTL-02 Initiated and/or continued target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <p>2 Foreign Materiel Acquisitions (FMA) 1 Launch Vehicle-2 (LV-2) Provided Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</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>								
Accomplishments/Planned Programs Subtotals				29.587	0.000	0.000	0.000	0.000

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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>				PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>				
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
• 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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).

In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3 Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	WX05: <i>Targets & Countermeasures Supports Capability Development</i>

Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.

Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.

As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.

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

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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>
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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			
Targets and Countermeasures supports the BMDS Capability Development Targets and Countermeasures Supports Capability Development - 1 WX05	TBD/TBD	Coleman Aerospace Orlando, FL	1.823	0.000		0.000		0.000		0.000	0	1.823	Continuing
Targets and Countermeasures supports the BMDS Capability Development Targets and Countermeasures Supports Capability Development - 2 WX05	C/CPAF	(LMSS) Lockheed Martin Space Systems Denver, CO	19.922	0.000		0.000		0.000		0.000	0	19.922	Continuing
Targets and Countermeasures supports the BMDS Capability Development Targets and Countermeasures Supports Capability Development - 3 WX05	TBD/TBD	Sandia National Labs Albuquerque, NM	4.566	0.000		0.000		0.000		0.000	0	4.566	Continuing
Targets and Countermeasures supports the BMDS Capability Development Targets	TBD/TBD	DFAS Indianapolis, IN	1.931	0.000		0.000		0.000		0.000	0	1.931	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>
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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			
and Countermeasures Supports Capability Development - 4 WX05													
Targets and Countermeasures supports the BMDS Capability Development Targets and Countermeasures Supports Capability Development - 5 WX05	TBD/TBD	Aerospace Los Angeles, CA	0.221	0.000		0.000		0.000		0.000	0	0.221	Continuing
Subtotal			28.463	0.000		0.000		0.000		0.000	0.000	28.463	

Remarks
NA

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT WX05: <i>Targets & Countermeasures Supports Capability Development</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	28.463	0.000		0.000		0.000		0.000	0.000	28.463	

Remarks
NA

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603888C: <i>Ballistic Missile Defense Test and Targets</i>					YX05: <i>Targets and Countermeasures Core</i>			
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
YX05: <i>Targets and Countermeasures Core</i>	258.816	405.905	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	664.721
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2010 YX05 funding includes funding transitioned from projects BX05, CX05 and WX05.

All Project YX05 funds support BMDS-Level Testing.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program Operations See Description Below	54.908	55.110	0.000	0.000	0.000

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Performed prime contractor program management and systems engineering functions including: specialty and production engineering; acquisition, production, logistics management; modeling and simulation; and test</p> <p>Performed studies/analyses of future target Launch Vehicles, launch platforms, Re-entry Vehicles, and associated objects</p> <p>Continued planning, coordinating, and developing characterization test plans and deliverables for Launch and Re-entry Vehicles</p> <p>Conducted CAIV Radar Cross Section (RCS) Characterization studies to reduce target costs</p> <p>Conducted Business Case Analysis for long term target planning and acquisition</p> <p>Conducted Independent Review Assessments of target development programs</p> <p>Updated target modeling and simulation for current threat scenarios and to add capability to model selected phenomenology and matter</p> <p><i>FY 2010 Plans:</i></p> <p>Perform prime contractor program management and systems engineering functions including: specialty and production engineering; acquisition, production, logistics management; modeling and simulation; and tests</p> <p>Perform studies/analyses of future target Launch Vehicles, launch platforms, and Associated Objects</p> <p>Continue planning, coordinating, and developing characterization test plans and deliverables for Launch and Re-entry Vehicles</p> <p>Conduct Independent Review Assessments of target development programs</p> <p>Conduct risk and mission assurance assessments</p> <p>Update target modeling and simulation for current threat scenarios; to establish formal validation documentation process and configuration management of all models; to incorporate detailed models for navigation error, thrust vector control errors, and missile bending effects in trajectory tools; and to further develop models for selected phenomenology and matter</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT YX05: <i>Targets and Countermeasures Core</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Logistics</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Logistics effort provides Missile Defense Agency (MDA) with inventory storage, aging surveillance, and transportation of Targets and Countermeasures (TC) hardware in support of Ballistic Missile Defense System (BMDS) testing. These efforts are essential in providing a dependable and reliable target system that enables the Missile Defense Agency to build more operational realistic targets to emulate known threats or potential threats. This effort includes integrated logistics support for all TC material including facilities, inventory maintenance; spare parts, aging surveillance, and special testing for Government Furnished Equipment (GFE) target rocket motor propellants and other hazardous material handling. This task provides for management and execution of the Consolidated Missile Asset Reuse for Targets (CMART) Program and provides all required facilities and monitoring for explosive storage and Foreign Materiel Acquisitions (FMA).</p> <p>Initiated Forward Exit Ring Crack/static fire analysis to characterize the risk of the forward exit ring crack on C-4 first stage motors.</p> <p>Continued inventory, storage, maintenance, and aging surveillance program for MDA's rocket motors, ground/launch support equipment and associated hardware</p> <p>Continued maintenance of existing support equipment and facilities at Redstone Arsenal, China Lake, Camp Navajo, Eglin AFB, Hawthorne Western Ammunition Depot, White Sands Missile Range, Kodiak Launch Complex, Courtland and Pacific Missile Range Facility</p>				30.985	38.305	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>Activated support capability at Hill AFB (Oasis), Utah Maintained Single Integration Capability (SIC), Courtland, Alabama Transported assets, hazardous material, and rocket motors Continued Government Furnished Equipment tracking, administration and property management Initiated closeout of the Strategic Target System (STARS)/Generic Rest of World (GROW) program</p> <p><i>FY 2010 Plans:</i> Complete Forward Exit Ring Crack /static fire analysis to characterize the risk of the forward exit ring crack on C-4 first stage motors. Continue inventory, storage, maintenance, and aging surveillance program for MDA's rocket motors, ground/launch support equipment and associated hardware Continue maintenance of existing support equipment and facilities at Redstone Arsenal, Camp Navajo, Eglin AFB, Hawthorne Western Ammunition Depot, White Sands Missile Range, Courtland and Pacific Missile Range Facility and Hill AFB (Oasis), Utah Maintain Single Integration Capability (SIC), Courtland, Alabama Transport assets, hazardous material, and rocket motors Continue Government Furnished Equipment tracking, administration and property management Continue closeout of the STARS/GROW program Procure Communications Security (COMSEC) equipment and encryptors</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
Support Equipment See Description Below				15.855	5.208	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> Support equipment effort provides for the development of support equipment for newly developed Launch Vehicles, Re-entry Vehicles and all up integrated target rounds. It also supports launch site activations through the transportation of support equipment to various test sites (e.g. Reagan Test Site and Kodiak Test Site). This effort will address producibility, manufacturing maturity and affordability for support equipment. Finally, it supports development and delivery of air launch support equipment.</p> <p>Provided transportation, sparing, and logistics support of equipment to support mission execution Completed development and delivery of ;Launch Vehicle (LV-2) Ground Support Equipment (GSE) and spares Transported GSE to Reagan Test Site and completed activation of site for LV-2 operations Continued development of Kodiak test site support equipment and conduct pathfinder operations. Transport GSE to Kodiak test site</p> <p><i>FY 2010 Plans:</i> Provide transportation, sparing, and logistics support of equipment to support mission execution ; ; Provide LV-2 support equipment to include motor handling ground pallets, pressure measurement transducers, and an umbilical retract system</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
Inventory/Spares See Description Below		32.434	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> Inventory/spares effort provides inventory to support program risk reduction for Ballistic Missile Defense System (BMDS) testing. It includes short, medium, intermediate, and long range target spares at various levels of build up including full up components (e.g. Re-entry Vehicle) and all up integrated target rounds. This effort addresses producibility, manufacturing maturity and affordability for inventory/spares. This effort enables quicker turn around in the event there is a test target failure and to quickly react to emerging flight test requirements, which will ultimately result in reduced BMDS costs. MDA/TC will utilize a rolling spare concept to ensure inventory is available when required.</p> <p>Note: Beginning in FY10, funds associated with Spares for this effort are being captured in the applicable target-type sub-section of this R-2A document. Fund associated with Inventory are being captured in the Logistics sub-section of this R-2A.</p> <p>Completed procurement of 5 Castor IVB motors for future missions Procured 2 Advanced Tactical Munitions Systems (ATACMS) Flight Termination Systems and 5 ATACMS motors Completed Generic Rest of World (GROW) rolling spare Initiated build of one two-stage Launch Vehicle (LV-2) spare Completed build of one Aegis Readiness Assessment Vehicle (ARAV-C) spare Completed build of one Foreign Materiel Acquisition (FMA) spare Procured Communications Security (COMSEC) equipment and encryptors</p> <p><i>FY 2010 Plans:</i></p> <p><i>FY 2011 Base Plans:</i> NA</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT YX05: <i>Targets and Countermeasures Core</i>	
B. Accomplishments/Planned Program (\$ in Millions)					
FY 2009					
FY 2010					
FY 2011 Base					
FY 2011 OCO					
FY 2011 Total					
<i>FY 2011 OCO Plans:</i> NA					
Intermediate Range Ballistic Missile (IRBM) Missions					
See Description Below					
<i>FY 2009 Accomplishments:</i>					
<i>FY 2010 Plans:</i> MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).					
Funding for this effort supports Intermediate Range Ballistic Missile (IRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).					
0.000 59.721 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Complete target hardware build and integration for the following target types:</p> <p>1 Launch Vehicle-2 (LV-2) Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <p>4 Launch Vehicle-2 (LV-2) Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Short Range Ballistic Missile (SRBM) Missions See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to</p>		0.000	98.984	0.000	0.000	0.000

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Funding for this effort supports Short Range Ballistic Missile (SRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>Complete target hardware build and integration for the following target types:</p> <ul style="list-style-type: none"> 1 ;Aegis Readiness Assessment Vehicle-C (ARAV-C) 1 Foreign Materiel Acquisition-1 (FMA-1) 2 ;Foreign Materiel Acquisition-2 (FMA-2) 3 ;Short Range Air Launched Targets (SRALT) 2 Medium Range Target (MRT) <p>Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data for the following missions:</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>FTX-06 E2, E3, and E4 JFTM-3 ATM-48 Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <p>3 ;ARAV-Cs 2 ;FMA-1 1 FMA Spare 1 SRALT-3 1 FMA-1 Backup 2 ARAV-Bs Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Medium Range Ballistic Missile (MRBM) Missions See Description Below <i>FY 2009 Accomplishments:</i> NA</p>	0.000	91.538	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
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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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 2010 Plans:</i></p> <p>MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Funding for this effort supports Medium Range Ballistic Missile (MRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>Complete target hardware build and integration for the following target types:</p> <p>1 Enhanced Long Range Air Launch Target (E-LRALT) Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types: 1 E-LRALT 1 Medium Range Target (MRT) 1 Foreign Materiel Acquisition-1 (FMA-1) Backup Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2011 Base Plans:</i> NA <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	258.816	405.905	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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	348.722	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	348.722

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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>
• 0603908C: <i>BMD EUROPEAN INTERCEPTOR SITE</i>											
• 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
• 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

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

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<p>The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).</p> <p>In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3 Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. The Agency has released the Request for Proposal for the MRBM Type 1 and anticipates awarding the contract in FY10. Release of Request for Proposals for IRBM and ICBM will be in FY10 with contract award in FY11. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.</p> <p>Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.</p> <p>Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.</p>		

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<p>As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.</p> <p>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.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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			
Program Operations Government Personnel and Travel YX05	Various/ Various	MDA Washington, DC	16.523	9.765	Jul 2010	0.000		0.000		0.000	0	26.288	Continuing
Program Operations Personnel Support - 1 YX05	C/FFP	Teledyne Solutions Huntsville, AL	24.884	20.597	Apr 2010	0.000		0.000		0.000	0	45.481	Continuing
Program Operations Personnel Support - 2 YX05	TBD/TBD	Cobham, Inc. Huntsville, AL	13.341	7.925	Apr 2010	0.000		0.000		0.000	0	21.266	Continuing
Program Operations Government Support - 1 YX05	C/FFP	US Army Space and Missile Defense Command Redstone Arsenal, AL	15.768	0.562	Jan 2010	0.000		0.000		0.000	0	16.330	Continuing
Program Operations Personnel Support - 3 YX05	C/FFP	Northrop Grumman Albuquerque, NM	9.966	5.708	Apr 2010	0.000		0.000		0.000	0	15.674	Continuing
Program Operations Personnel Support - 4 YX05	TBD/TBD	Tecolote Huntsville, AL	1.731	0.424	Apr 2010	0.000		0.000		0.000	0	2.155	Continuing
Program Operations Personnel Support - 5 YX05	TBD/TBD	US Army Aviation and Missile Command Redstone Arsenal, AL	1.717	0.802	Jan 2010	0.000		0.000		0.000	0	2.519	Continuing
	TBD/TBD	AMRDEC	0.447	0.900	Jan 2010	0.000		0.000		0.000	0	1.347	Continuing

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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			
Program Operations Government Support - 2 YX05		Huntsville, AL											
Program Operations Personnel Support - 6 YX05	C/FFP	SRS Redstone Arsenal, AL	0.782	0.789	Apr 2010	0.000		0.000		0.000	0	1.571	Continuing
Program Operations Personnel Support - 7 YX05	TBD/TBD	Johns Hopkins University Applied Physics Lab Baltimore, MD	1.337	0.456	Apr 2010	0.000		0.000		0.000	0	1.793	Continuing
Program Operations Personnel Support - 8 YX05	TBD/TBD	SMC US Air Force Space and Missile Systems Center Kirtland AFB, NM	0.630	0.541	Jul 2010	0.000		0.000		0.000	0	1.171	Continuing
Program Operations Personnel Support - 9 YX05	C/CPFF	Paradigm Technologies Arlington, VA	0.020	1.684	Jan 2010	0.000		0.000		0.000	0	1.704	Continuing
Program Operations Personnel Support - 10 YX05	TBD/TBD	AMRDC UAH	0.028	0.000		0.000		0.000		0.000	0	0.028	Continuing
Program Operations Personnel Support - 11 YX05	TBD/TBD	USAASC Redstone Arsenal, AL	0.652	0.000	Jan 2010	0.000		0.000		0.000	0	0.652	Continuing
Program Operations Personnel Support - 12 YX05	TBD/TBD	Patuxie Partnership Huntsville, AL	0.336	0.000	Apr 2010	0.000		0.000		0.000	0	0.336	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Program Operations BAE Systems YX05	C/CPFF	BAE Systems Huntsville, AL	0.000	0.305		0.000		0.000		0.000	0	0.305	Continuing
Program Operations CACI YX05	C/CPFF	CACI Huntsville, AL	0.000	0.400		0.000		0.000		0.000	0	0.400	Continuing
Program Operations Computer Science Corp YX05	C/CPFF	CSC Huntsville, AL	0.000	0.712		0.000		0.000		0.000	0	0.712	Continuing
Program Operations Coleman Technology YX05	C/CPFF	Coleman Huntsville, AL	0.000	0.560		0.000		0.000		0.000	0	0.560	Continuing
Program Operations Missile Defense Agency YX05	Various/ Various	Missile Defense Agency Huntsville	0.000	2.980		0.000		0.000		0.000	0	2.980	Continuing
Launch Vehicle Development NRE Launch Vehicle Development NRE - 1 YX05	C/CPAF	Lockheed Martin Denver, CO	88.446	4.436	Jul 2010	0.000		0.000		0.000	0	92.882	Continuing
Launch Vehicle Development NRE Launch Vehicle Development NRE - 2 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	6.711	0.000		0.000		0.000		0.000	0	6.711	Continuing
Launch Vehicle Development NRE Launch Vehicle	TBD/TBD	Naval Air Warfare Center Port Hueneme (Detachment)	4.842	0.000	Jul 2010	0.000		0.000		0.000	0	4.842	Continuing

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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			
Development NRE - 3 YX05		White Sands, NM											
Launch Vehicle Development NRE Launch Vehicle Development NRE - 4 YX05	TBD/TBD	United States Army Space & Missile Defense Command Redstone Arsenal, AL	0.994	0.000		0.000		0.000		0.000	0	0.994	Continuing
Launch Vehicle Development NRE Launch Vehicle Development - 1 YX05	C/FFP	Coleman Aerospace Orlando, FL	4.411	5.309		0.000		0.000		0.000	0	9.720	Continuing
Launch Vehicle Development NRE Launch Vehicle Development - 2 YX05	C/CPAF	Northrop Grumman Albuquerque, NM	0.483	0.000		0.000		0.000		0.000	0	0.483	Continuing
Launch Vehicle Development NRE Launch Vehicle Development - 3 YX05	TBD/TBD	AMC White Sands, NM	0.330	0.000		0.000		0.000		0.000	0	0.330	Continuing
Launch Vehicle Development NRE Launch Vehicle Development - 4 YX05	TBD/TBD	Naval Air Warfare Center Port Hueneme Division White Sands, NM	0.348	0.000		0.000		0.000		0.000	0	0.348	Continuing
Launch Vehicle Development NRE Launch Vehicle	C/TBD	TBD TBD	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Development NRE - new RFP YX05													
Re-entry Vehicle (RV) Development NRE Re-entry Vehicle (RV) Development NRE - 1 YX05	C/CPAF	Lockheed Martin Denver, CO	16.607	2.090	Jul 2010	0.000		0.000		0.000	0	18.697	Continuing
Re-entry Vehicle (RV) Development NRE Re-entry Vehicle (RV) Development NRE - 2 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	2.942	0.000	Jan 2010	0.000		0.000		0.000	0	2.942	Continuing
Re-entry Vehicle (RV) Development NRE Re-entry Vehicle (RV) Development NRE - 3 YX05	TBD/TBD	SMDC/US Army Space and Missile Defense Command -	0.578	0.000		0.000		0.000		0.000	0	0.578	Continuing
Re-entry Vehicle (RV) Development NRE Re-entry Vehicle (RV) Development NRE - new RFP YX05	C/TBD	TBD TBD	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing
Associated Objects Development Associated Objects - 1 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	18.476	0.492	Jan 2010	0.000		0.000		0.000	0	18.968	Continuing
Associated Objects Development Associated Objects - 2 YX05	TBD/TBD	Massachusetts Institute of	1.771	2.389	Jan 2010	0.000		0.000		0.000	0	4.160	Continuing

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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			
		Technology/ Lincoln Lexington, MA											
Associated Objects Development Associated Objects - 3 YX05	TBD/TBD	Military Defense Technologies Pt. Mugu, CA	0.759	0.000		0.000		0.000		0.000	0	0.759	Continuing
Associated Objects Development Associated Objects - 4 YX05	Various/ Various	Various Various	0.556	0.987	Jul 2010	0.000		0.000		0.000	0	1.543	Continuing
Associated Objects Development Associated Objects - new RFP YX05	C/TBD	TBD TBD	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing
Associated Objects Development Lockheed Martin Space Systems (UK) YX05	Various/ Various	Lockheed Martin UK	0.000	3.185		0.000		0.000		0.000	0	3.185	Continuing
System Engineering/ Program Management System Engineering - 1 YX05	C/CPAF	(LMSS) Lockheed Martin Space Systems Courtland, AL	60.978	21.890	Jul 2010	0.000		0.000		0.000	0	82.868	Continuing
System Engineering/ Program Management System Engineering - 2 YX05	TBD/TBD	Johns Hopkins University Applied Physics Lab Baltimore, MD	2.167	2.072	Apr 2010	0.000		0.000		0.000	0	4.239	Continuing
System Engineering/ Program Management	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	4.258	3.794	Apr 2010	0.000		0.000		0.000	0	8.052	Continuing

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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			
System Engineering - 3 YX05													
System Engineering/ Program Management System Engineering - 4 YX05	C/FFP	Colsa, Inc. Huntsville, AL	1.814	1.982	Apr 2010	0.000		0.000		0.000	0	3.796	Continuing
System Engineering/ Program Management System Engineering - 5 YX05	TBD/TBD	MIT/Lincoln Labs Lexington, MA	0.689	0.000		0.000		0.000		0.000	0	0.689	Continuing
System Engineering/ Program Management System Engineering - 6 YX05	TBD/TBD	Air Launch LLC Kirkland, WA	0.580	0.000		0.000		0.000		0.000	0	0.580	Continuing
System Engineering/ Program Management System Engineering - 7 YX05	C/FFP	TSI/Earth-To-Sky Huntsville, AL	0.260	0.000		0.000		0.000		0.000	0	0.260	Continuing
System Engineering/ Program Management System Engineering - 8 YX05	TBD/TBD	SMC/US Army Space & Missile Systems Center Albuquerque, NM	0.403	0.531		0.000		0.000		0.000	0	0.934	Continuing
System Engineering/ Program Management System Engineering - 9 YX05	TBD/TBD	NAWC Pax River, MD	0.039	0.000		0.000		0.000		0.000	0	0.039	Continuing
	TBD/TBD		0.101	0.000		0.000		0.000		0.000	0	0.101	Continuing

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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			
System Engineering/ Program Management System Engineering - 10 YX05		Raytheon Company White Sands, NM											
System Engineering/ Program Management System Engineering - 11 YX05	TBD/TBD	Military Defense Technology Pt. Mugu, CA	0.121	0.000		0.000		0.000		0.000	0	0.121	Continuing
System Engineering/ Program Management System Engineering - 12 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	0.202	0.000	Apr 2010	0.000		0.000		0.000	0	0.202	Continuing
System Engineering/ Program Management System Engineering - 13 YX05	C/FFP	Boeing Huntsville, AL	0.076	0.106	Jan 2010	0.000		0.000		0.000	0	0.182	Continuing
System Engineering/ Program Management System Engineering - 14 YX05	TBD/TBD	MDT/Toyon/SRA Various	0.304	0.000		0.000		0.000		0.000	0	0.304	Continuing
System Engineering/ Program Management System Engineering - 15 YX05	C/FFP	Paradigm Huntsville, AL	0.234	0.127	Apr 2010	0.000		0.000		0.000	0	0.361	Continuing
System Engineering/ Program Management MRBM T2 RFP YX05	C/TBD	TBD TBD	0.000	1.963	Apr 2010	0.000		0.000		0.000	0	1.963	Continuing

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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			
System Engineering/ Program Management US Army Aviation Research, Devel, and Engineering YX05	TBD/TBD	US Army Huntsville	0.000	4.300		0.000		0.000		0.000	0	4.300	Continuing
System Engineering/ Program Management IRBM RFP YX05	C/TBD	TBD TBD	0.000	0.105		0.000		0.000		0.000	0	0.105	Continuing
System Engineering/ Program Management Wyle Industries YX05	C/CPFF	Wyle Industries Huntsville, AL	0.000	1.281		0.000		0.000		0.000	0	1.281	Continuing
Logistics Logistics - 1 YX05	C/CPAF	Lockheed Martin Courtland, AL	7.770	8.758	Jul 2010	0.000		0.000		0.000	0	16.528	Continuing
Logistics Logistics - 2 YX05	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	4.427	1.617	Jul 2010	0.000		0.000		0.000	0	6.044	Continuing
Logistics Logistics - 3 YX05	C/CPFF	Alliant Techsystems Magna, UT	6.437	8.870	Jul 2010	0.000		0.000		0.000	0	15.307	Continuing
Logistics Logistics - 4 YX05	TBD/TBD	United States Air Force Space & Missile Systems Kirtland AFB, NM	0.100	0.000		0.000		0.000		0.000	0	0.100	Continuing
Logistics Logistics - 5 YX05	TBD/TBD	United States Property & Fiscal Office for Arizona Phoenix, AZ	3.721	2.123	Apr 2010	0.000		0.000		0.000	0	5.844	Continuing

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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			
Logistics Logistics - 6 YX05	TBD/TBD	New Mexico State University Physical Sciences Lab Las Cruces, NM	1.065	0.637	Apr 2010	0.000		0.000		0.000	0	1.702	Continuing
Logistics Logistics - 7 YX05	TBD/TBD	Naval Air Warfare Center Weapons Division China Lake, CA	2.050	1.593	Jul 2010	0.000		0.000		0.000	0	3.643	Continuing
Logistics Logistics - 8 YX05	TBD/TBD	Defense Finance and Accounting Services Indianapolis, IN	2.116	1.398	Jul 2010	0.000		0.000		0.000	0	3.514	Continuing
Logistics Logistics - 9 YX05	TBD/TBD	US Naval Surface Warfare Center Crane, IN	0.629	5.924	Jan 2010	0.000		0.000		0.000	0	6.553	Continuing
Logistics Logistics - 10 YX05	TBD/TBD	US Army Aviation and Missile Command Redstone Arsenal, AL	0.334	0.000	Jan 2010	0.000		0.000		0.000	0	0.334	Continuing
Logistics Logistics - 11 YX05	TBD/TBD	CECOM Eglin AFB, FL	0.098	0.061	Jan 2010	0.000		0.000		0.000	0	0.159	Continuing
Logistics Logistics - 12 YX05	TBD/TBD	DISA Scott, AFB	0.012	0.039	Jan 2010	0.000		0.000		0.000	0	0.051	Continuing
Logistics Logistics - 13 YX05	TBD/TBD	Vandenberg AFB Vandenberg, CA	0.116	0.000		0.000		0.000		0.000	0	0.116	Continuing

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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			
Logistics Logistics - 14 YX05	TBD/TBD	NSWC Port Hueneme (Detachment) White Sands, NM	0.119	0.122	Jan 2010	0.000		0.000		0.000	0	0.241	Continuing
Logistics Logistics - 15 YX05	TBD/TBD	US Army Joint Munitions Command Hawthorne Army Depot, NV	0.144	0.926	Apr 2010	0.000		0.000		0.000	0	1.070	Continuing
Logistics Logistics - 16 YX05	TBD/TBD	Naval Surface Warfare Center Indian Head, MD	0.115	0.000	Apr 2010	0.000		0.000		0.000	0	0.115	Continuing
Logistics Logistics - 17 YX05	C/CPAF	Lockheed Martin Denver, CO	1.037	0.000	Jul 2010	0.000		0.000		0.000	0	1.037	Continuing
Logistics Logistics - 18 YX05	TBD/TBD	SRCC Redstone Arsenal, AL	1.000	0.000		0.000		0.000		0.000	0	1.000	Continuing
Logistics Logistics - 19 YX05	TBD/TBD	PMRF Bark Sands, HI	0.039	0.000		0.000		0.000		0.000	0	0.039	Continuing
Logistics Logistics - 20 YX05	TBD/TBD	Chugach Development Corp. Anchorage, AK	0.002	0.000		0.000		0.000		0.000	0	0.002	Continuing
Logistics Logistics - 21 YX05	Various/ Various	Various Various	0.380	0.253	Apr 2010	0.000		0.000		0.000	0	0.633	Continuing
Logistics Logistics - 22 YX05	TBD/TBD	Sandia National Labs	3.060	0.000	Jul 2010	0.000		0.000		0.000	0	3.060	Continuing

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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			
		Albuquerque, NM											
Logistics Logistics - 23 YX05	TBD/TBD	SMDC Huntsville, AL	0.036	0.000		0.000		0.000		0.000	0	0.036	Continuing
Logistics Logistics - 24 YX05	TBD/TBD	Aerojet Albuquerque, NM	1.439	0.406	Jan 2010	0.000		0.000		0.000	0	1.845	Continuing
Logistics Logistics - 25 YX05	TBD/TBD	AMC White Sands, NM	0.351	0.000	Jan 2010	0.000		0.000		0.000	0	0.351	Continuing
Logistics Logistics - 26 YX05	C/FFP	Northrop Grumman Albuquerque, NM	0.434	0.655	Apr 2010	0.000		0.000		0.000	0	1.089	Continuing
Logistics Logistics - 27 YX05	TBD/TBD	Chugach Support Services Huntsville, AL	0.330	0.000		0.000		0.000		0.000	0	0.330	Continuing
Logistics Logistics - 28 YX05	TBD/TBD	Hill Air Force Base Hill AFB	0.618	0.931	Jan 2010	0.000		0.000		0.000	0	1.549	Continuing
Logistics Logistics - 29 YX05	TBD/TBD	RTTC Redstone Arsenal, AL	0.638	1.136	Jan 2010	0.000		0.000		0.000	0	1.774	Continuing
Logistics Logistics - 30 YX05	TBD/TBD	SAIC Huntsville, AL	0.891	0.168	Apr 2010	0.000		0.000		0.000	0	1.059	Continuing
Logistics Logistics - 31 YX05	TBD/TBD	Camp Navajo Bellemont, AZ	0.031	0.000		0.000		0.000		0.000	0	0.031	Continuing
Logistics Logistics - 32 YX05	TBD/TBD	DESC San Antonio, TX	0.217	0.065	Jan 2010	0.000		0.000		0.000	0	0.282	Continuing
	TBD/TBD	Navy-SSP	0.323	0.496	Jan 2010	0.000		0.000		0.000	0	0.819	Continuing

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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			
Logistics Logistics - 33 YX05		Arlington, VA											
Logistics Logistics - 34 YX05	TBD/TBD	NAWC-Pax Pax River, MD	0.697	0.000		0.000		0.000		0.000	0	0.697	Continuing
Logistics Logistics - 35 YX05	TBD/TBD	OO-ALC Hill AFB, UT	0.152	0.000		0.000		0.000		0.000	0	0.152	Continuing
Logistics Logistics - 36 YX05	TBD/TBD	309th Missile Maintenance Wing Hill AFB, UT	0.455	0.000	Apr 2010	0.000		0.000		0.000	0	0.455	Continuing
Logistics Logistics - 37 YX05	TBD/TBD	ADMC Anniston, AL	0.057	0.032	Jan 2010	0.000		0.000		0.000	0	0.089	Continuing
Logistics Logistics - 38 YX05	TBD/TBD	AFCESA Courtland, AL	0.085	0.000		0.000		0.000		0.000	0	0.085	Continuing
Logistics Logistics - 39 YX05	TBD/TBD	AST Huntsville, AL	0.005	0.000		0.000		0.000		0.000	0	0.005	Continuing
Logistics Logistics - 40 YX05	C/FFP	Gray Research Huntsville, AL	0.000	0.079	Jan 2010	0.000		0.000		0.000	0	0.079	Continuing
Logistics Logistics - 41 YX05	C/FFP	Interstate Battery System Albuquerque, NM	0.000	0.021	Apr 2010	0.000		0.000		0.000	0	0.021	Continuing
Logistics Logistics - 42 YX05	TBD/TBD	National Security Agency Albuquerque, NM	0.000	0.059	Jan 2010	0.000		0.000		0.000	0	0.059	Continuing
Logistics MRBM T1 RFP YX05	C/TBD	TBD TBD	0.000	1.062	Apr 2010	0.000		0.000		0.000	0	1.062	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Logistics Edwards Air Force Base YX05	TBD/TBD	Edwards Air Force Base Albuquerque, NM	0.000	0.544		0.000		0.000		0.000	0	0.544	Continuing
Logistics White Sands Missile Range YX05	TBD/TBD	White Sands Missile Range New Mexico	0.000	0.150		0.000		0.000		0.000	0	0.150	Continuing
Logistics US Army Aviation and Missile Research, Development and Engineering YX05	TBD/TBD	AMRDEC Huntsville AL	0.000	0.180		0.000		0.000		0.000	0	0.180	Continuing
Support Equipment Support Equipment - 1 YX05	C/CPAF	Lockheed Martin Courtland, AL	23.287	2.554	Jul 2010	0.000		0.000		0.000	0	25.841	Continuing
Support Equipment Support Equipment - 2 YX05	TBD/TBD	Defense Finance and Accounting Services Indianapolis, IN	0.145	0.000	Jul 2010	0.000		0.000		0.000	0	0.145	Continuing
Support Equipment Support Equipment - 3 YX05	TBD/TBD	Ronald Reagan Ballistic Missile Defense Test Site Kwajalein, Marshall Islands	0.000	0.212	Apr 2010	0.000		0.000		0.000	0	0.212	Continuing
Support Equipment Support Equipment - 4 YX05	TBD/TBD	SAIC Huntsville, AL	2.571	0.000		0.000		0.000		0.000	0	2.571	Continuing
	TBD/TBD	Redstone Arsenal Garrison	0.165	0.000		0.000		0.000		0.000	0	0.165	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Support Equipment Support Equipment - 5 YX05		Huntsville, AL											
Support Equipment Support Equipment - 6 YX05	TBD/TBD	US Naval Surface Warfare Center Crane, IN	0.107	0.000		0.000		0.000		0.000	0	0.107	Continuing
Support Equipment Support Equipment - 7 YX05	C/CPFF	Coleman Aerospace Orlando, FL	0.000	2.442		0.000		0.000		0.000	0	2.442	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 1 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	0.000	4.720	Jul 2010	0.000		0.000		0.000	0	4.720	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 2 YX05	C/CPAF	Lockheed Martin Courtland, AL	0.000	50.112	Jul 2010	0.000		0.000		0.000	0	50.112	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 3 YX05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	0.320	Jan 2010	0.000		0.000		0.000	0	0.320	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 4 YX05	TBD/TBD	Coleman Aerospace Orlando, FL	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
	TBD/TBD		0.000	0.531	Jul 2010	0.000		0.000		0.000	0	0.531	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 5 YX05		Defense Finance & Accounting Services Indianapolis, IN											
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 6 YX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	0.000	0.378	Jan 2010	0.000		0.000		0.000	0	0.378	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 7 YX05	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 8 YX05	C/FFP	Teledyne Solutions Huntsville, AL	0.000	0.792	Apr 2010	0.000		0.000		0.000	0	0.792	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 9 YX05	TBD/TBD	MDIOC Shriever AFB, CO	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 10 YX05	TBD/TBD	NSWC-Crane Division Crane, IN	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 11 YX05	TBD/TBD	Aerospace Corporation Los Angeles, CA	0.000	0.879	Apr 2010	0.000		0.000		0.000	0	0.879	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 12 YX05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.000	0.000	Oct 2009	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 13 YX05	TBD/TBD	Alaska Aerospace Kodiak Island, AK	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 14 YX05	TBD/TBD	Defense Information Systems Agency (DISA) Scott AFB, IL	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 15 YX05	TBD/TBD	Missile Defense Data Center (MDDC) Albuquerque, NM	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 16 YX05	TBD/TBD	Hanscom Air Force Base Bedford, MA	0.000	0.000	Jan 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 17 YX05	TBD/TBD	Naval Air Warfare Center Patuxent River, MD	0.000	0.000	Apr 2010	0.000		0.000		0.000	0	0	Continuing
Intermediate Range Ballistic Missile (IRBM)	TBD/TBD	US Army Kwajalein Atoll	0.000	1.575		0.000		0.000		0.000	0	1.575	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Missions IRBM Missions - 18 YX05													
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 19 YX05	Various/ Various	Various Various	0.000	0.414		0.000		0.000		0.000	0	0.414	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 1 YX05	TBD/TBD	Sandia National Labs Albuquerque, NM	0.000	0.625	Jul 2010	0.000		0.000		0.000	0	0.625	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 2 YX05	C/CPAF	Lockheed Martin Courtland, AL	0.000	22.373	Jul 2010	0.000		0.000		0.000	0	22.373	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 3 YX05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	2.038	Apr 2010	0.000		0.000		0.000	0	2.038	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 4 YX05	C/CPAF	Coleman Aerospace Orlando, FL	0.000	10.944	Jul 2010	0.000		0.000		0.000	0	10.944	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 5 YX05	TBD/TBD	DFAS Indianapolis, IN	0.000	8.240	Jul 2010	0.000		0.000		0.000	0	8.240	Continuing
	TBD/TBD		0.000	31.665	Jul 2010	0.000		0.000		0.000	0	31.665	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 6 YX05		NSWC-Port Hueneme (Detachment) White Sands, NM											
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 7 YX05	TBD/TBD	PMRF Barking Sands, HI	0.000	0.406	Apr 2010	0.000		0.000		0.000	0	0.406	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 8 YX05	C/FFP	Teledyne Solutions Huntsville, AL	0.000	0.466	Jan 2010	0.000		0.000		0.000	0	0.466	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 9 YX05	TBD/TBD	MDIOC Schriever AFB, CO	0.000	0.242	Jul 2010	0.000		0.000		0.000	0	0.242	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 13 YX05	TBD/TBD	NAWC-WD China Lake, CA	0.000	3.758	Jan 2010	0.000		0.000		0.000	0	3.758	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 14 YX05	TBD/TBD	NAWC-Pax Patuxent River, MD	0.000	6.394	Jul 2010	0.000		0.000		0.000	0	6.394	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 15 YX05	TBD/TBD	AMC USAF Scott AFB, IL	0.000	5.628	Jul 2010	0.000		0.000		0.000	0	5.628	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - new RFP YX05	C/TBD	TBD TBD	0.000	0.458	Apr 2010	0.000		0.000		0.000	0	0.458	Continuing
Short Range Ballistic Missile (SRBM) Missions Aero Space Corp YX05	TBD/TBD	AeroSpace Corp Los Angeles, CA	0.000	1.018		0.000		0.000		0.000	0	1.018	Continuing
Short Range Ballistic Missile (SRBM) Missions MRBM T1 RFP YX05	C/TBD	TBD TBD	0.000	0.405		0.000		0.000		0.000	0	0.405	Continuing
Short Range Ballistic Missile (SRBM) Missions Ronald Reagan Ballistic Missile Defense Site YX05	TBD/TBD	Ronald Reagan Ballistic Missile Defense Site Kwajalein Atoll	0.000	0.186		0.000		0.000		0.000	0	0.186	Continuing
Short Range Ballistic Missile (SRBM) Missions Redstone Technical Test Center YX05	TBD/TBD	Redstone Technical Test Center Huntsville, AL	0.000	0.150		0.000		0.000		0.000	0	0.150	Continuing
Short Range Ballistic Missile (SRBM) Missions US Army White Sands Missile Range YX05	TBD/TBD	US Army White Sands White Sands, NM	0.000	0.690		0.000		0.000		0.000	0	0.690	Continuing
Short Range Ballistic Missile (SRBM) Missions Various YX05	C/TBD	Various Various	0.000	0.322		0.000		0.000		0.000	0	0.322	Continuing
	TBD/TBD	NSWC, PHD	0.000	2.976		0.000		0.000		0.000	0	2.976	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Short Range Ballistic Missile (SRBM) Missions Naval Surface Warfare Center YX05		Port Hueneme, CA											
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 1 YX05	TBD/TBD	Aerospace Corporation Los Angeles, CA	0.000	0.461	Jan 2010	0.000		0.000		0.000	0	0.461	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 3 YX05	C/CPFF	Coleman Aerospace Orlando, FL	0.000	71.531	Jul 2010	0.000		0.000		0.000	0	71.531	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 4 YX05	TBD/TBD	Defense Finance and Accounting Service Indianapolis, IN	0.000	2.230	Apr 2010	0.000		0.000		0.000	0	2.230	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 5 YX05	TBD/TBD	Naval Air Warfare Center - Weapons Division China Lake, CA	0.000	0.106	Jan 2010	0.000		0.000		0.000	0	0.106	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 6 YX05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	4.052	Jul 2010	0.000		0.000		0.000	0	4.052	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 9 YX05	TBD/TBD	309th Missile Maintenance Wing Hill AFB	0.000	0.849		0.000		0.000		0.000	0	0.849	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 10 YX05	TBD/TBD	MDIOC Schriever AFB	0.000	0.106		0.000		0.000		0.000	0	0.106	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions -11 YX05	C/CPFF	Orbital Sciences Corp Chandler, AZ	0.000	9.135		0.000		0.000		0.000	0	9.135	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions -12 YX05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	0.000	0.319		0.000		0.000		0.000	0	0.319	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions -13 YX05	TBD/TBD	Ronald Regan Ballistic Missile Defense Site Kwajalein Atoll	0.000	0.610		0.000		0.000		0.000	0	0.610	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions -14 YX05	TBD/TBD	US Army Kwajalein Atoll	0.000	0.016		0.000		0.000		0.000	0	0.016	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 15 YX05	C/TBD	Alliant Systems Magna UT	0.000	2.123		0.000		0.000		0.000	0	2.123	Continuing
Subtotal			376.447	405.905		0.000		0.000		0.000	0.000	782.352	

Remarks
All Project YX05 funds support BMDS-Level Testing.

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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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			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	376.447	405.905	0.000	0.000	0.000	0.000	782.352	

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Enhanced Long Range Air Launch Target (E-LRALT)					■	■	■	■																								
Aegis Readiness Assessment Vehicle (ARAV-C)	■	■	■	■																												
LV-2 Development	■	■	■	■	■	■	■	■																								
Family 1 & 2 Development	■	■	■	■	■	■	■	■																								
Family 3, 4, 5 NRE/Development	■	■	■	■	■	■	■	■																								
UK Project Agreement					■	■	■	■																								
MBRV-2 Development	■	■	■	■	■	■	■	■																								

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT YX05: <i>Targets and Countermeasures Core</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Enhanced Long Range Air Launch Target (E-LRALT)	1	2010	4	2010
Aegis Readiness Assessment Vehicle (ARAV-C)	1	2009	4	2009
LV-2 Development	1	2009	4	2010
Family 1 & 2 Development	1	2009	4	2010
Family 3, 4, 5 NRE/Development	1	2009	4	2010
UK Project Agreement	1	2010	4	2010
MBRV-2 Development	1	2009	4	2010

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</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
MD05: <i>Targets Program</i>	0.000	0.000	517.065	0.000	517.065	587.940	467.401	409.499	401.416	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Starting in FY 2011 MD05 funding includes funding transitioned from project YX05.

All Project MD05 funds support BMDS-Level Testing.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Targets and Countermeasures (TC) program provides threat representative targets to effectively demonstrate capability of the evolving layered missile defense system in a simultaneous test and operations operating environment. Based on the systems engineering assessments of realistic threat scenarios, the targets and countermeasures program acquires and launches short, medium, intermediate, and long range capability-based targets, to include Foreign Materiel Acquisitions (FMAs), with enhanced payloads to test, verify, and validate the performance of the BMDS.

Funding for the TC program supports the continuation of the target program`s source activities which include the requirements, design, build, and test of BMDS targets, associated payloads, and flight missions. It also supports the maintenance, aging surveillance, refurbishment, and routine testing of existing government furnished equipment (GFE) boosters and target components, as well as the purchase of long lead material assets and asset management items for short, medium, intermediate, and long-range target components.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program Operations See Description Below	0.000	0.000	64.643	0.000	64.643

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT MD05: <i>Targets Program</i>				
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> NA</p> <p><i>FY 2011 Base Plans:</i> Provide government, contractor, and Federally Funded Research and Development Center (FFRDC) program staff (salary and travel) for the overall management of the program including the following functions: systems engineering, test and evaluation, logistics, program management and acquisition, scheduling, business management, financial management, contract administration, earned value management, cost estimation and analysis, data management, security, quality assurance, mission assurance, and safety</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Target Development (NRE) See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p>				0.000	0.000	114.706	0.000	114.706

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> Target development effort provides for the non-recurring engineering (NRE) development of Short Range Ballistic Missile (SRBM), Medium Range Ballistic Missile (MRBM), Intermediate Range Ballistic Missile (IRBM), and Intercontinental Ballistic Missile (ICBM) launch vehicle (LV), reentry vehicle (RV), and associated object (AO) systems to support Ballistic Missile Defense System (BMDS) flight testing. It includes short, medium, intermediate, and long range target systems with air, sea, and ground launch capabilities as well as enhancements to legacy target systems for cost effective target solutions. Efforts include requirements decomposition, design, qualification testing, and characterization. Efforts include ensuring boosters, inter-stages, avionics systems, reentry vehicles, payload deployment modules (PDM), and associated objects adhere to interface specifications and meet reliability, mission assurance, and cost goals. Efforts address target producibility, manufacturing maturity and affordability. Supporting this objective are the necessary modeling and simulation efforts, analyses, configuration management, technical interchange meetings, and design reviews resulting in designs that meet BMDS requirements.</p> <p>Continue IRBM development Initiate ICBM development Initiate ICBM Type 3 development Continue AO Family 3, 4, and 5 development Continue design of the United Kingdom AO payload concept</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
System Engineering/Program Management See Description Below		0.000	0.000	43.947	0.000	43.947

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT MD05: <i>Targets Program</i>				
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> NA</p> <p><i>FY 2011 Base Plans:</i> BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of Targets and Countermeasures (TC) to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels.</p> <p>System engineering/program management effort includes activities by TC prime contractors as well as non-prime systems engineering efforts. This effort provides target program technical direction to meet program requirements while balancing cost, schedule, performance, and risk. This effort utilizes the spiral development process for long-range plans initiating new developments. It conducts functional requirements allocation to product lines, defines product line specifications/interfaces, and follows guidelines for design reviews. It performs target system analysis to verify system performance, defines target program baselines, controls flight test configurations, and conducts pre and post-flight analysis. It identifies treaty and environmental issues and develops plans for issue resolution. Efforts not on the prime contracts in support of the ;TC program include Modeling and Simulation (M&S) execution and improvements to evolve TC M&S capability; trajectory analyses; signature analyses and characterization; studies to assess alternative target and platform solutions; assessments of risk and mission assurance; and design approval of government furnished equipment (GFE).</p>								

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT MD05: <i>Targets Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Perform prime contractor program management and systems engineering functions including: specialty and production engineering; acquisition, production, logistics management; modeling and simulation; and tests</p> <p>Perform studies/analyses of future target Launch Vehicles, launch platforms, and Associated Objects</p> <p>Continue planning, coordinating, and developing characterization test plans and deliverables for Launch and Re-entry Vehicles</p> <p>Conduct Independent Review Assessments of target development programs</p> <p>Conduct risk and mission assurance assessments</p> <p>Update target modeling and simulation for current threat scenarios; to establish formal validation documentation process and configuration management of all models; to incorporate detailed models for navigation error, thrust vector control errors, and missile bending effects in trajectory tools; and to further develop models for selected phenomenology and matter</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Logistics</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Logistics effort provides Missile Defense Agency (MDA) with inventory storage, aging surveillance, and transportation of Targets and Countermeasures (TC) hardware in support of Ballistic Missile Defense</p>				0.000	0.000	39.010	0.000	39.010

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B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>System (BMDS) testing. These efforts are essential in providing a dependable and reliable target system that enables the Missile Defense Agency to build more operational realistic targets to emulate known threats or potential threats. This effort includes integrated logistics support for all TC material including facilities, inventory maintenance; spare parts, aging surveillance, and special testing for Government Furnished Equipment (GFE) target rocket motor propellants and other hazardous material handling. This task provides for management and execution of the Consolidated Missile Asset Reuse for Targets (CMART) Program and provides all required facilities and monitoring for explosive storage and Foreign Materiel Acquisition (FMA).</p> <p>Continue inventory, storage, maintenance, and aging surveillance program for MDA`s rocket motors, ground/launch support equipment and associated hardware Continue maintenance of existing support equipment and facilities at Redstone Arsenal, Camp Navajo, Eglin AFB, Hawthorne Western Ammunition Depot, White Sands Missile Range, ;Courtland and Pacific Missile Range Facility and Hill AFB (Oasis), Utah Maintain Single Integration Capability (SIC), Courtland, Alabama Transport assets, hazardous material, and rocket motors Continue Government Furnished Equipment tracking, administration and property management</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Support Equipment See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p>				0.000	0.000	4.247	0.000	4.247

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Support equipment effort provides for the development of support equipment for newly developed Launch Vehicles, Re-entry Vehicles and all up integrated target rounds. It also supports launch site activations through the transportation of support equipment to various test sites. This effort will address producibility, manufacturing maturity and affordability for support equipment. Finally, it supports development and delivery of air launch support equipment.</p> <p>Provide transportation, sparing, and logistics support of equipment to support LV-2 mission execution</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Intermediate Range Ballistic Missile (IRBM) Missions</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded</p>	0.000	0.000	74.694	0.000	74.694

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).</p> <p>Funding for this effort supports Intermediate Range Ballistic Missile (IRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>The quantities listed reflect requirements as delineated in the MDA IMTP. Any revisions to the IMTP could affect quantities/target types.</p> <p>Complete target hardware build and integration for the following target types:</p> <p>2 Launch Vehicle-2 (LV-2) Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data</p> <p>Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p>					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
2 LV-2 1 Intermediate Range Ballistic Missile (IRBM) Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2011 OCO Plans:</i> NA						
Short Range Ballistic Missile (SRBM) Missions See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDS Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).		0.000	0.000	107.810	0.000	107.810

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Funding for this effort supports Short Range Ballistic Missile (SRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>The quantities listed reflect requirements as delineated in the MDA IMTP. Any revisions to the IMTP could affect quantities/target types.</p> <p>Complete target hardware build and integration for the following target types:</p> <ul style="list-style-type: none"> 1 Foreign Materiel Acquisition-1 (FMA-1) 1 FMA-1 Spare 1 FMA-1 Backup 1 Aegis Readiness Assessment Vehicles-C (ARAV-C) <p>Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data</p> <p>Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <ul style="list-style-type: none"> 2 Aegis Readiness Assessment Vehicles-B (ARAV-B) 3 ARAV-C 1 ARAV-C Spare 					

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>		PROJECT MD05: <i>Targets Program</i>																			
B. Accomplishments/Planned Program (\$ in Millions)																							
<table border="1"> <thead> <tr> <th></th> <th>FY 2009</th> <th>FY 2010</th> <th>FY 2011 Base</th> <th>FY 2011 OCO</th> <th>FY 2011 Total</th> </tr> </thead> <tbody> <tr> <td> 1 FMA-1 1 Short Range Air Launch Target (SRALT)-3 ; ; 2 Medium Range Ballistic Missiles (MRBM) Type 1 Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2011 OCO Plans:</i> NA </td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Medium Range Ballistic Missile (MRBM) Missions See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> BMDs Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDs Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP). </td> <td align="center">0.000</td> <td align="center">0.000</td> <td align="center">68.008</td> <td align="center">0.000</td> <td align="center">68.008</td> </tr> </tbody> </table>							FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	1 FMA-1 1 Short Range Air Launch Target (SRALT)-3 ; ; 2 Medium Range Ballistic Missiles (MRBM) Type 1 Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2011 OCO Plans:</i> NA						Medium Range Ballistic Missile (MRBM) Missions See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> BMDs Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDs Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).	0.000	0.000	68.008	0.000	68.008
	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total																		
1 FMA-1 1 Short Range Air Launch Target (SRALT)-3 ; ; 2 Medium Range Ballistic Missiles (MRBM) Type 1 Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability <i>FY 2011 OCO Plans:</i> NA																							
Medium Range Ballistic Missile (MRBM) Missions See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> BMDs Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Targets and Countermeasures Element Level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides Targets and Countermeasures participation in the consolidated MDA-wide System Test Program and the resources for the, planning, design, execution, and management of Targets and Countermeasures in BMD System testing in accordance with the BMDs Test Policy. This applies to all Flight, Integrated Ground, and Distributed Ground Tests and Post-test analysis and reconstructions listed in the Integrated Master Test Plan (IMTP).	0.000	0.000	68.008	0.000	68.008																		

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Funding for this effort supports Medium Range Ballistic Missile (MRBM) tests and the continued development and verification of the Ballistic Missile Defense System (BMDS). Specifically, it provides the Missile Defense Agency with integrated ballistic missile flight test target hardware (launch vehicles, reentry vehicles, associated objects, and kits); target characterization; quality and mission assurance; government furnished equipment and services; target range support (telemetry data collection equipment, range safety support equipment and launch control center unique displays); transportation and logistics support; element and range mission coordination; and launch services (includes mission planning, range and element data deliverables, communications security equipment and management).</p> <p>The quantities listed reflect requirements as delineated in the ;MDA IMTP. Any revisions to ;the IMTP could affect quantities/target types.</p> <p>Complete target hardware build and integration for the following target types:</p> <p>1 Enhanced Long Range Air Launch Target (E-LRALT) 1 Long Range Air Launch Target (LRALT) Conduct mission planning and range coordination activities, execute target missions, and collect and analyze target system data Initiate and/or continue target hardware development, target integration, mission planning, and range coordination for future missions of the following target types:</p> <p>1 E-LRALT 2 LRALTs Provide Quality Assurance and Mission Assurance compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability</p>					

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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	0.000	0.000	517.065	0.000	517.065

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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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

The Missile Defense Agency's Targets and Countermeasures program office provides for the development and procurement of ballistic missile targets and countermeasures for the Ballistic Missile Defense System in support of the Missile Defense Agency's flight test program. Target requirements are derived from the Agency's Integrated Master Test Plan.

The Agency currently procures targets through the Targets and Countermeasures Prime Contract with Lockheed Martin and additional contracts including the Orbital Medium Range Target (MRT) Contract, and the ATK rocket motor sustainment contract. In addition the Agency utilizes existing United States Air Force contracts such as the Orbital/Suborbital Program contract and the Sounding Rockets Program contracts administered by the United States Air Force Space Development and Test Wing in Albuquerque, New Mexico. Further, the Agency procures Lance targets through a cooperative agreement with New Mexico State University's Physical Sciences Lab and ARAV targets through the Naval Surface Warfare Center Port Hueneme Division White Sands contracts. Targets and Countermeasures has assumed a 50/50 cost-share with the Japanese Ministry of Defense for the future Standard Missile-3 (SM-3) Cooperative Development (SCD) Flight Test Missions (SFTM).

In our new strategy starting in FY 2010, we will compete our future Medium, Intermediate, and Intercontinental Range Ballistic Missile Targets. The targets the Agency procures are categorized into three types: Type 1 Targets are simple, baseline configurations; Type 2 Targets have increased capability or complexity; and Type 3

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
<p>Targets are a one of a kind design/development or launch activity. This will result in a single contractor award for each Target class that provides the Agency the best value solution with the exception of unique target configurations procured in low unit quantities (Type 3 Targets). Type 3 Targets in a given class may be awarded to a contractor different than the contractor who is awarded the rest of the line items associated with the respective target class. The Agency is currently preparing requests for proposals to procure targets by class under Target Systems Performance Specifications to support target execution requirements through the Future Years Defense Plan. These targets will be procured as All-Up-Rounds from vendors who are responsible for all aspects of target performance from tip to tail. This Request for Proposal specifies just-in-time delivery dates to meet Integrated Master Test Plan (IMTP) flight test requirements and also requests proposals suggest phasing for economic order quantity deliveries. The Agency will procure pre and post mission planning, data products, support to modeling and simulation and ground test, inventory sustainment and management, and flight test execution. The Agency has released the Request for Proposal for MRBM Type 1 and anticipates awarding the contract in FY10. Request for Proposals for IRBM and ICBM will be in FY10 with contract awards taking place in FY11. Backup targets are also being procured to reduce risk of delays to the BMDS flight test program due to primary target failure or weapon system problems.</p> <p>Foreign Materiel Acquisitions will continue to be procured under the existing Lockheed Martin Contract HQ0006-04-D-0006. The Agency will review lessons learned and available documentation and determine the feasibility of procuring additional Foreign Materiel Acquisitions under the Lockheed Martin or other available contracts in 2010. Additionally, the Lockheed Martin contract will be utilized to procure an additional two (2) LV-2s above those under Delivery Order-8, and a single Short Range Air Launch Target.</p> <p>Establishing a manufacturing approach to target procurements is key to our strategy and allows for economic order quantity purchasing opportunities. We seek to acquire the full spectrum of target capabilities with the minimum number of production lines. The Agency seeks to promote high quality, repeatable production capability, including robust management of sub-tier supplier manufacturing capabilities.</p> <p>As we transition from our current approach using just in time for each target to an inventory approach with simple product lines to meet multiple test requirements, the current work ongoing will not transition to new contracts. Work under existing contracts/orders will run to completion rather than being transitioned to a new prime contractor.</p> <p>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</p>		

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<p>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.</p> <p><u>E. Performance Metrics</u> NA</p>		

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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			
Program Operations Government Personnel and Travel MD05	TBD/TBD	MDA Washington, DC	0.000	0.000		19.197	Jul 2011	0.000		19.197	Continuing	Continuing	Continuing
Program Operations Personnel Support - 1 MD05	C/FFP	Teledyne Solutions Huntsville, AL	0.000	0.000		22.539	Jul 2011	0.000		22.539	Continuing	Continuing	Continuing
Program Operations Personnel Support - 2 MD05	C/FFP	Cobham, Inc. Huntsville, AL	0.000	0.000		8.321	Jul 2011	0.000		8.321	Continuing	Continuing	Continuing
Program Operations Personnel Support - 3 MD05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	0.000		5.741	Jul 2011	0.000		5.741	Continuing	Continuing	Continuing
Program Operations Personnel Support - 4 MD05	C/FFP	Tecolote Huntsville, AL	0.000	0.000		0.426	Jul 2011	0.000		0.426	Continuing	Continuing	Continuing
Program Operations Government Support - 1 MD05	TBD/TBD	AMRDEC Huntsville, AL	0.000	0.000		0.892	Jul 2011	0.000		0.892	Continuing	Continuing	Continuing
Program Operations Personnel Support - 5 MD05	C/FFP	SRS Huntsville, AL	0.000	0.000		0.793	Jul 2011	0.000		0.793	Continuing	Continuing	Continuing
Program Operations Personnel Support - 6 MD05	TBD/TBD	Johns Hopkins University Applied Physics Lab Laurel, MD	0.000	0.000		0.461	Jul 2011	0.000		0.461	Continuing	Continuing	Continuing
	TBD/TBD	SMC US Air Force Space and	0.000	0.000		0.536	Jul 2011	0.000		0.536	Continuing	Continuing	Continuing

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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			
Program Operations Personnel Support - 7 MD05		Missile Systems Center Kirtland AFB, NM											
Program Operations Personnel Support - 8 MD05	TBD/TBD	US Army Aviation and Missile Command Huntsville, AL	0.000	0.000		0.873	Jul 2011	0.000		0.873	Continuing	Continuing	Continuing
Program Operations Personnel Support - 9 MD05	C/FFP	BAE Systems Huntsville, AL	0.000	0.000		0.307	Jul 2011	0.000		0.307	Continuing	Continuing	Continuing
Program Operations Personnel Support - 10 MD05	C/CPFF	Paradigm Technologies Arlington, VA	0.000	0.000		1.809	Jul 2011	0.000		1.809	Continuing	Continuing	Continuing
Program Operations Personnel Support - 11 MD05	TBD/TBD	US Army Space & Missile Defense Command Huntsville, AL	0.000	0.000		1.053	Jul 2011	0.000		1.053	Continuing	Continuing	Continuing
Program Operations Personnel Support - 12 MD05	C/FFP	CACI Huntsville, AL	0.000	0.000		0.408	Jul 2011	0.000		0.408	Continuing	Continuing	Continuing
Program Operations Personnel Support - 13 MD05	C/FFP	Computer Sciences Corp. Huntsville, AL	0.000	0.000		0.721		0.000		0.721	Continuing	Continuing	Continuing
Program Operations Personnel Support - 14 MD05	C/FFP	Coleman Technology, Inc. Huntsville, AL	0.000	0.000		0.566		0.000		0.566	Continuing	Continuing	Continuing
	C/CPAF		0.000	0.000		4.524	Jul 2011	0.000		4.524	Continuing	Continuing	Continuing

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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			
Target Development (NRE) Target Development (NRE) - 1 MD05		Lockheed Martin Space Systems Courtland, AL											
Target Development (NRE) Target Development (NRE) - 2 MD05	TBD/TBD	Sandia National Labs Albuquerque, NM	0.000	0.000		3.848	Jul 2011	0.000		3.848	Continuing	Continuing	Continuing
Target Development (NRE) Target Development (NRE) - 3 MD05	C/CPFF	Teledyne Solutions, Inc. Various	0.000	0.000		1.467	Jul 2011	0.000		1.467	Continuing	Continuing	Continuing
Target Development (NRE) Target Development (NRE) - new RFP MD05	C/TBD	TBD TBD	0.000	0.000		99.164	Jul 2011	0.000		99.164	Continuing	Continuing	Continuing
Target Development (NRE) Development (NRE) - 4 MD05	C/CPAF	Lockheed Martin Space Systems United Kingdom	0.000	0.000		3.958		0.000		3.958	Continuing	Continuing	Continuing
Target Development (NRE) Development (NRE) - 5 MD05	TBD/TBD	MIT Lincoln Labs Lexington, MA	0.000	0.000		1.745		0.000		1.745	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - 1 MD05	TBD/TBD	Johns Hopkins University Applied Physics Lab Laurel, MD	0.000	0.000		1.560	Jul 2011	0.000		1.560	Continuing	Continuing	Continuing
	C/FFP		0.000	0.000		4.178	Jul 2011	0.000		4.178	Continuing	Continuing	Continuing

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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			
System Engineering/ Program Management System Engineering - 2 MD05		Teledyne Solutions, Inc. Huntsville, AL											
System Engineering/ Program Management System Engineering - 3 MD05	C/FFP	Raytheon Huntsville, AL	0.000	0.000		0.138	Jul 2011	0.000		0.138	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - 4 MD05	C/FFP	Boeing Huntsville, AL	0.000	0.000		0.113	Jul 2011	0.000		0.113	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - 5 MD05	C/FFP	Cobham Huntsville, AL	0.000	0.000		0.568	Jul 2011	0.000		0.568	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - new RFP MD05	C/TBD	TBD TBD	0.000	0.000		3.037	Jul 2011	0.000		3.037	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - 6 MD05	C/CPAF	Lockheed Martin Space Systems Courtland, AL	0.000	0.000		33.779		0.000		33.779	Continuing	Continuing	Continuing
System Engineering/ Program Management System Engineering - 7 MD05	TBD/TBD	SMC US Air Force Space and Missile Systems Center	0.000	0.000		0.574		0.000		0.574	Continuing	Continuing	Continuing

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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			
		Kirtland AFB, NM											
Logistics Logistics - 1 MD05	C/CPAF	Lockheed Martin Courtland, AL	0.000	0.000		11.898	Jul 2011	0.000		11.898	Continuing	Continuing	Continuing
Logistics Logistics - 2 MD05	TBD/TBD	Redstone Arsenal Garrison Huntsville, AL	0.000	0.000		1.751	Jul 2011	0.000		1.751	Continuing	Continuing	Continuing
Logistics Logistics - 3 MD05	C/CPFF	Alliant Techsystems Magna, UT	0.000	0.000		4.387	Jul 2011	0.000		4.387	Continuing	Continuing	Continuing
Logistics Logistics - 4 MD05	C/FFP	United States Property & Fiscal Office for Arizona Phoenix, AZ	0.000	0.000		2.298	Jul 2011	0.000		2.298	Continuing	Continuing	Continuing
Logistics Logistics - 5 MD05	C/FFP	New Mexico State University Physical Sciences Lab Las Cruces, NM	0.000	0.000		0.689	Jul 2011	0.000		0.689	Continuing	Continuing	Continuing
Logistics Logistics - 6 MD05	TBD/TBD	Defense Munitions Center Anniston, AL	0.000	0.000		0.034	Jul 2011	0.000		0.034	Continuing	Continuing	Continuing
Logistics Logistics - 7 MD05	TBD/TBD	Defense Finance and Accounting Services Indianapolis, IN	0.000	0.000		0.593	Jul 2011	0.000		0.593	Continuing	Continuing	Continuing
Logistics Logistics - 8 MD05	TBD/TBD	Naval Surface Warfare Center	0.000	0.000		5.837	Jul 2011	0.000		5.837	Continuing	Continuing	Continuing

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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			
		Crane, IN											
Logistics Logistics - 9 MD05	TBD/TBD	Army Aviation and Missile Command White Sands, NM	0.000	0.000		0.163	Jul 2011	0.000		0.163	Continuing	Continuing	Continuing
Logistics Logistics - 10 MD05	C/FFP	Aerojet Albuquerque, NM	0.000	0.000		0.439	Jul 2011	0.000		0.439	Continuing	Continuing	Continuing
Logistics Logistics - 11 MD05	C/FFP	SAIC Huntsville, AL	0.000	0.000		0.176	Jul 2011	0.000		0.176	Continuing	Continuing	Continuing
Logistics Logistics - 12 MD05	TBD/TBD	AMRDEC Huntsville, AL	0.000	0.000		0.195	Jul 2011	0.000		0.195	Continuing	Continuing	Continuing
Logistics Logistics - 13 MD05	TBD/TBD	Army Communications Electronics Command Eglin AFB, FL	0.000	0.000		0.065	Jul 2011	0.000		0.065	Continuing	Continuing	Continuing
Logistics Logistics - 14 MD05	TBD/TBD	Defense Energy Support Center San Antonio, TX	0.000	0.000		0.141	Jul 2011	0.000		0.141	Continuing	Continuing	Continuing
Logistics Logistics - 15 MD05	TBD/TBD	Defense Information Systems Agency Scott AFB, IL	0.000	0.000		0.042	Jul 2011	0.000		0.042	Continuing	Continuing	Continuing
Logistics Logistics - 16 MD05	C/FFP	Gray Research Huntsville, AL	0.000	0.000		0.086	Jul 2011	0.000		0.086	Continuing	Continuing	Continuing
	TBD/TBD		0.000	0.000		1.008	Jul 2011	0.000		1.008	Continuing	Continuing	Continuing

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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			
Logistics Logistics - 17 MD05		Hill Air Force Base Ogden, UT											
Logistics Logistics - 18 MD05	C/FFP	Interstate Battery System Albuquerque, NM	0.000	0.000		0.023	Jul 2011	0.000		0.023	Continuing	Continuing	Continuing
Logistics Logistics - 19 MD05	TBD/TBD	Naval Strategic Systems Program Arlington, VA	0.000	0.000		0.121	Jul 2011	0.000		0.121	Continuing	Continuing	Continuing
Logistics Logistics - 20 MD05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	0.000		0.709	Jul 2011	0.000		0.709	Continuing	Continuing	Continuing
Logistics Logistics - 21 MD05	TBD/TBD	National Security Agency Albuquerque, NM	0.000	0.000		0.066	Jul 2011	0.000		0.066	Continuing	Continuing	Continuing
Logistics Logistics - 22 MD05	TBD/TBD	Edwards Air Force Base Albuquerque, NM	0.000	0.000		0.643	Jul 2011	0.000		0.643	Continuing	Continuing	Continuing
Logistics Logistics - 23 MD05	TBD/TBD	NSWC Port Hueneme (Detachment) White Sands, NM	0.000	0.000		0.132	Jul 2011	0.000		0.132	Continuing	Continuing	Continuing
Logistics Logistics - 24 MD05	TBD/TBD	Redstone Technical Test Center Huntsville, AL	0.000	0.000		0.704	Jul 2011	0.000		0.704	Continuing	Continuing	Continuing
	TBD/TBD		0.000	0.000		0.113	Jul 2011	0.000		0.113	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Logistics Logistics - 25 MD05		Army Joint Munitions Command Hawthorne AFB, NV											
Logistics Logistics - 26 MD05	Various/ Various	Various Various	0.000	0.000		0.277	Jul 2011	0.000		0.277	Continuing	Continuing	Continuing
Logistics Logistics - new RFP MD05	C/TBD	TBD TBD	0.000	0.000		4.695	Jul 2011	0.000		4.695	Continuing	Continuing	Continuing
Logistics Logistics - 27 MD05	TBD/TBD	Naval Air Warfare Center Weapons Division China Lake, CA	0.000	0.000		1.725		0.000		1.725	Continuing	Continuing	Continuing
Support Equipment Support Equipment - 1 MD05	C/CPAF	Lockheed Martin Courtland, AL	0.000	0.000		3.116	Jul 2011	0.000		3.116	Continuing	Continuing	Continuing
Support Equipment Support Equipment - 2 MD05	TBD/TBD	Ronald Reagan Ballistic Missile Defense Test Site Kwajalein, Marshall Islands	0.000	0.000		1.131	Jul 2011	0.000		1.131	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 1 MD05	TBD/TBD	Sandia National Labs Albuquerque, NM	0.000	0.000		0.811	Jul 2011	0.000		0.811	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM)	C/CPAF	Lockheed Martin Courtland, AL	0.000	0.000		51.709	Jul 2011	0.000		51.709	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Missions IRBM Missions - 2 MD05													
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 3 MD05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	0.000		1.091	Jul 2011	0.000		1.091	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 4 MD05	TBD/TBD	MIT Lincoln Labs Lexington, MA	0.000	0.000		4.929	Jul 2011	0.000		4.929	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 5 MD05	TBD/TBD	Defense Finance & Accounting Service Indianapolis, IN	0.000	0.000		2.451	Jul 2011	0.000		2.451	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 6 MD05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	0.000	0.000		1.290	Jul 2011	0.000		1.290	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 7 MD05	C/FFP	Teledyne Solutions, Inc. Huntsville, AL	0.000	0.000		0.857	Jul 2011	0.000		0.857	Continuing	Continuing	Continuing
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - 8 MD05	C/FFP	US Army Kwajalein Atoll Test Facility Kwajalein Atoll, Marshall Islands	0.000	0.000		5.374	Jul 2011	0.000		5.374	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Intermediate Range Ballistic Missile (IRBM) Missions IRBM Missions - new RFP MD05	C/TBD	TBD TBD	0.000	0.000		6.182	Jul 2011	0.000		6.182	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 1 MD05	C/FFP	Coleman Aerospace Orlando, FL	0.000	0.000		21.704	Jul 2011	0.000		21.704	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 2 MD05	C/CPAF	Lockheed Martin Courtland, AL	0.000	0.000		16.148	Jul 2011	0.000		16.148	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 3 MD05	C/CPAF	Northrop Grumman Albuquerque, NM	0.000	0.000		1.120	Jul 2011	0.000		1.120	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 4 MD05	TBD/TBD	Defense Finance and Accounting Service Indianapolis, IN	0.000	0.000		3.702	Jul 2011	0.000		3.702	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 5 MD05	TBD/TBD	Naval Surface Warfare Center Port Hueneme White Sands, NM	0.000	0.000		17.395	Jul 2011	0.000		17.395	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 6 MD05	C/FFP	Teledyne Solutions Huntsville, AL	0.000	0.000		3.908	Jul 2011	0.000		3.908	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 7 MD05	TBD/TBD	Aerospace Corp. El Segundo, CA	0.000	0.000		0.799	Jul 2011	0.000		0.799	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - new RFP (MRBM T1) MD05	C/TBD	TBD TBD	0.000	0.000		18.948	Jul 2011	0.000		18.948	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 8 MD05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.000	0.000		0.039		0.000		0.039	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 9 MD05	TBD/TBD	Naval Air Warfare Center Patuxent River Pax River, MD	0.000	0.000		10.031		0.000		10.031	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 10 MD05	TBD/TBD	Naval Air Warfare Center Weapons Division China Lake, CA	0.000	0.000		0.790		0.000		0.790	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 11 MD05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	0.000	0.000		0.020		0.000		0.020	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions	TBD/TBD	Naval Air Warfare Center	0.000	0.000		10.161		0.000		10.161	Continuing	Continuing	Continuing

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

APPROPRIATION/BUDGET ACTIVITY 0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603888C: Ballistic Missile Defense Test and Targets	PROJECT MD05: Targets Program
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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			
SRBM Missions - 12 MD05		Port Hueneme, CA											
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 13 MD05	TBD/TBD	Ronald Reagan Test Site Kwajalein Atoll, Marshall Islands	0.000	0.000		0.479		0.000		0.479	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 14 MD05	TBD/TBD	Redstone Technical Test Center Redstone Arsenal, AL	0.000	0.000		0.132		0.000		0.132	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 15 MD05	TBD/TBD	Sandia National Laboratories Albuquerque, NM	0.000	0.000		0.017		0.000		0.017	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 16 MD05	TBD/TBD	US Air Force Air Mobility Command Scott AFB, IL	0.000	0.000		0.484		0.000		0.484	Continuing	Continuing	Continuing
Short Range Ballistic Missile (SRBM) Missions SRBM Missions - 17 MD05	TBD/TBD	US Army White Sands Missile Range White Sands, NM	0.000	0.000		1.933		0.000		1.933	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 1 MD05	TBD/TBD	US Air Force Air Mobility Command Scott AFB, IL	0.000	0.000		3.613	Jul 2011	0.000		3.613	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 2 MD05	C/CPAF	Coleman Aerospace Orlando, FL	0.000	0.000		44.583	Jul 2011	0.000		44.583	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 3 MD05	TBD/TBD	Missile Defense Integration & Operations Center Schriever AFB, CO	0.000	0.000		0.290	Jul 2011	0.000		0.290	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 4 MD05	TBD/TBD	Aerospace Corp. El Segundo, CA	0.000	0.000		0.650	Jul 2011	0.000		0.650	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 5 MD05	TBD/TBD	Ronald Reagan Ballistic Missile Defense Test Site Kwajalein, Marshall Islands	0.000	0.000		1.630	Jul 2011	0.000		1.630	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 6 MD05	TBD/TBD	Defense Finance & Accounting Service Indianapolis, IN	0.000	0.000		1.747	Jul 2011	0.000		1.747	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 7 MD05	TBD/TBD	Naval Air Warfare Center Weapons Division China Lake, AZ	0.000	0.000		1.570		0.000		1.570	Continuing	Continuing	Continuing
	C/CPAF		0.000	0.000		7.575		0.000		7.575	Continuing	Continuing	Continuing

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 8 MD05		Northrop Grumman Albuquerque, NM											
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 9 MD05	C/CPFF	Orbital Sciences Corp. Chandler, AZ	0.000	0.000		3.658		0.000		3.658	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 10 MD05	TBD/TBD	Pacific Missile Range Facility Barking Sands, HI	0.000	0.000		0.846		0.000		0.846	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 11 MD05	TBD/TBD	Sandia National Laboratories Albuquerque, NM	0.000	0.000		0.317		0.000		0.317	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 12 MD05	C/CPFF	Teledyne Solutions, Inc. Huntsville, AL	0.000	0.000		1.514		0.000		1.514	Continuing	Continuing	Continuing
Medium Range Ballistic Missile (MRBM) Missions MRBM Missions - 13 MD05	TBD/TBD	US Army Kwajalein Test Center Kwajalein Atoll, Marshall Islands	0.000	0.000		0.015		0.000		0.015	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		517.065		0.000		517.065			

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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			

Remarks
All Project MD05 funds support BMDS-Level Testing.

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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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	Award Date			
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	Award Date			
	0.000	0.000		517.065		0.000		517.065				

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Intermediate Range Ballistic Missile (IRBM) Development/NRE									■	■	■	■	■	■	■	■												
Intercontinental Ballistic Missile (ICBM) Development/NRE									■	■	■	■	■	■	■	■	■	■										
ICBM Type 3 Development/NRE									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Family 2D/2 AO Development/NRE									■	■	■	■																
UK Project Agreement									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Medium Range Ballistic Missile (MRBM) Development/NRE																	■	■	■	■	■							

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Exhibit R-4A, RDT&E Schedule Details: 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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD05: <i>Targets Program</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Intermediate Range Ballistic Missile (IRBM) Development/NRE	1	2011	4	2012
Intercontinental Ballistic Missile (ICBM) Development/NRE	1	2011	2	2013
ICBM Type 3 Development/NRE	1	2011	4	2014
Family 2D/2 AO Development/NRE	1	2011	4	2011
UK Project Agreement	1	2011	4	2015
Medium Range Ballistic Missile (MRBM) Development/NRE	1	2013	1	2014

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</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>	23.161	22.741	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	45.902
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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	23.161	22.741	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 0603888C: <i>Ballistic Missile Defense Test and Targets</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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	23.161	22.741	0.000	0.000	0.000

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
• 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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD40: <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
<i>MD40: Program-Wide Support</i>	0.000	0.000	37.227	0.000	37.227	40.431	30.923	27.337	29.092	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11

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> NA <i>FY 2010 Plans:</i> NA	0.000	0.000	37.227	0.000	37.227

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD40: <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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	37.227	0.000	37.227

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
• 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
• 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

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 0603888C: <i>Ballistic Missile Defense Test and Targets</i>	PROJECT MD40: <i>Program-Wide Support</i>
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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

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-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
0400: Research, Development, Test & Evaluation, Defense-Wide BA 4: Advanced Component Development & Prototypes (ACD&P)				PE 0603890C: Ballistic Missile Defense Enabling Programs							
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	402.776	358.751	402.769	0.000	402.769	468.673	457.745	473.871	488.799	0	3,053.384
YX24: Systems Engineering & Integration	107.835	98.684	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	206.519
MD24: System Engineering & Integration	0.000	0.000	124.040	0.000	124.040	155.241	144.571	157.903	167.762	Continuing	Continuing
YX28: Intelligence & Security	20.007	17.789	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	37.796
MD28: Intelligence & Security	0.000	0.000	15.905	0.000	15.905	15.711	15.992	16.276	16.360	Continuing	Continuing
YX29: Producibility and Manufacturing Technology	40.805	44.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	84.837
MD29: Producibility & Manufacturing Technology	0.000	0.000	36.575	0.000	36.575	33.659	36.523	37.287	38.065	Continuing	Continuing
YX30: BMD Information Management Systems	103.676	105.536	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	209.212
MD30: BMD Information Management Systems	0.000	0.000	111.829	0.000	111.829	92.926	94.821	94.132	93.315	Continuing	Continuing
YX31: Modeling & Simulation	90.523	48.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	138.655
MD31: Modeling & Simulation	0.000	0.000	64.623	0.000	64.623	120.904	120.634	122.531	124.937	Continuing	Continuing
YX32: Quality, Safety, and Mission Assurance	24.674	31.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	55.683
MD32: Quality, Safety, and Mission Assurance	0.000	0.000	32.881	0.000	32.881	33.094	30.326	30.885	31.219	Continuing	Continuing
ZX40: Program-Wide Support	15.256	13.569	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	28.825
MD40: Program-Wide Support	0.000	0.000	16.916	0.000	16.916	17.138	14.878	14.857	17.141	Continuing	Continuing

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>
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Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects YX24, YX28, YX29, YX30, YX31, and YX32 for FY 2009-FY 2010 are now captured in Projects MD24, MD28, MD29, MD30, MD31, and MD32 for FY2011-FY2015.

For FY2011-FY2015, Ballistic Missile Defense System (BMDS) Engineering Technology Protection and Standards (Anti-Tamper, Engineering Manufacturing Readiness Level (EMRL) Assessments, Commonality and Standards) was transferred from Producibility and Manufacturing Technology (MD29) to Systems Engineering & Integration (MD24).

For FY2011-FY2015, Ballistic Missile Defense (BMDS) Capability Assessment (BCA) Integrated Master Test Plan (IMTP) was transferred from Test and Targets (MD04) to Systems Engineering & Integration (MD24).

The FY2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated BMDS architecture to counter existing regional threats; continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

A. Mission Description and Budget Item Justification

The mission of the Ballistic Missile Defense System (BMDS) continues to be to defend the United States, our deployed forces, allies, and friends against all ranges of enemy ballistic missiles in all phases of flight, with greater emphasis on defense of U.S. forces, allies, and friends from regional threats posed by short- and medium-range ballistic missiles. The Phased Adaptive Approach (PAA) was developed in response to the rapid proliferation of short and medium range ballistic missiles in Iran and the threat they pose to United States Allies and partners, as well as to United States deployed personnel and their accompanying families in the Middle East and in Europe. By leveraging recent advances in sensor and interceptor technologies, the United States will aggressively counter this growing regional threat with a more powerful and agile system. The United States is pursuing a four phased approach which will provide a more effective missile defense capability for defense of NATO territories and enhance United States homeland defense, it will be complementary of and interoperable with those being developed by NATO, be applicable in other theaters around the world, and will be more adaptable and flexible in order to counter threat advances and provide increased defended areas over time. The initial phase includes the deployment of current and proven missile defense, including the sea-based Aegis Weapons System, the SM-3 interceptor (Block IA), and sensors such as the forward-based Army Navy/Transportable Radar Surveillance system (AN/TPY-2). Subsequent phases will be implemented based on technical maturity, appropriate testing, and threat driven requirements.

The Ballistic Missile Defense (BMD) System Enabling Programs provide the Missile Defense Agency with the critical processes needed to integrate stand-alone missile defense systems into a layered BMDS to achieve cost- and operational-efficiencies, while improving protection performance with increased defended area and

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>

minimizing force structure costs. The Enabling Programs, embedded within a single program element, bring common program management and engineering functions up to the MDA level, saving manpower and cost and ensuring commonality in key areas. As an example, BMDS level System Engineering and Integration ensures that the BMD System level performance trades can occur across the legacy Service systems and new BMDS and Service Components ensuring capability improvements through BMDS level integration of the Unifying Missile Defense Functions (UMDF). These programs enable the BMD system to operate in an integrated, secure, and technologically collaborative capacity, in terms of both equipment and proficiency. Specifically, the Enabling Programs evaluate the methodology, threat, manufacturing maturity, technical safeguards, and mission assurance effectiveness independently, but also simultaneously assess whether the BMD System is able to maintain its integrity and superiority with advances in technology development, and function as an integrated system.

The MDA Enabling Programs are:

- Systems Engineering and Integration
- Modeling and Simulation Engineering
- Producibility and Manufacturing Technology
- Quality, Safety, and Mission Assurance
- Intelligence and Security
- Information Management Systems

Systems Engineering and Integration leads the integration of BMDS Element and Component capabilities to provide the Warfighter with the capability to defend the United States and its friends and allies from ballistic missile attacks. Systems Engineering develops integrated BMDS capability improvements such as early intercept through BMDS level control of system requirements and allocating those requirements to the Element and Component levels. As adversaries become increasingly sophisticated in their use of countermeasures, the Systems Engineering role includes designing integrated discrimination capabilities to optimize system performance against the evolving threat. Similarly, as missile defense technologies continually advance and the threat changes, Modeling and Simulation evaluates the BMDS Components` accuracy, efficiency and overall system performance. Producibility and Manufacturing provides crosscutting assessments to ensure the production equipment and processes being used for the BMD System are technologically mature, while applying common approaches and best value engineering principals across the BMDS. Quality, Safety, and Mission Assurance has the distinct cradle-to-grave role of providing the safety requirements throughout design, manufacturing and test processes as well as during system operation to achieve a safe and reliable BMD System. Intelligence and Security provides the adversary data necessary for the development of the BMDS common threat. Accurate and timely threat data is necessary to enable technologically advanced system solutions and system

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performance predictions. Security is also provided as an Enabling Program to apply the same level of system capability protection across the entire BMDS. Information management is vital to the efficient operation and safeguarding of all information from development to fielding new BMDS capabilities.

(YX24 & MD24) SYSTEMS ENGINEERING AND INTEGRATION (SE&I)

The Systems Engineering and Integration (SE&I) mission is to define, manage, and integrate all engineering development for the Ballistic Missile Defense System (BMDS). SE&I activities provide the technical expertise, tools, and facilities to develop an integrated, layered BMDS in a five-phased approach: 1) Systems engineering planning/concept development; 2) design and specification; 3) horizontal integration of software and hardware; 4) test integration, verification and model validation; and 5) operational assessments to support fielding. SE&I provides top-down, overall architectural direction through collaborative system engineering processes to ensure the BMDS functions are integrated in a cost and operationally efficient manner. SE&I includes the Countermeasures/Counter-Countermeasures (CM/CCM) program which develops feasible engineering concepts and designs to avert BMDS performance degradation when an adversary deploys system countermeasures. SE&I also includes Engineering and Manufacturing Readiness Level (EMRL) assessment to ensure missile defense technologies are ready for production and anti-tamper efforts to ensure BMDS assets are suitable for international fielding, whether for US defense, or for defense of Allies and Friends. Together with Modeling and Simulation and Test and Evaluation, SE&I focuses on defining test objectives and executing test campaigns aimed at anchoring BMDS-level models and simulation with critical data to prove Ballistic Missile Defense performance.

Systems Engineering and Integration Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

Systems Engineering and Integration processes, expertise, tools and facilities are required to achieve an integrated BMDS and develop the warfighters` capability, both in equipment and operations. The Systems Engineering process is highly collaborative, using close cooperation with weapons, sensors, command and control, battle management and communications elements and components. This ensures the unity of effort in the development of subsystems and architecture designs to deliver system-level capabilities. The Combatant Commanders are involved in all phases of the Systems Engineering and Integration process, providing input to influence design and develop components to improve reliability, operational availability, maintainability and life-cycle affordability. Systems Engineering products optimize system-level performance and ensure that system assessments are based on a rigorous test and verification program that builds confidence among our stakeholders in the assessed capabilities.

SE&I Major Program Goals:

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Engineer the integrated and layered BMD System and prove Ballistic Missile Defense performance
Verify and Assess through testing the BMD System performance and capabilities
Perform analysis of alternatives
Create future BMD System Architectural options
Identify manufacturing risks using Engineering and Manufacturing Readiness Level (EMRL) assessments to analyze the maturity of BMDS

(YX31 & MD31) MODELING AND SIMULATION ENGINEERING (M&S)

The mission of the Modeling and Simulation (M&S) program is to engineer and deliver validated, integrated simulation solutions for the primary uses of Ballistic Missile Defense System (BMDS) Performance Assessment and Ground Test, with additional capability to support BMDS-Element integration, missile defense wargames and exercises (national and international), BMDS training, and BMDS concept analysis. In this role, M&S provides cost-effective and proactive tools to assess the fielded capabilities of the BMDS, analyzes and fosters accelerated integration of Element and component capability into the BMDS, and is a valuable training and planning tool for warfighting Concept of Operations and missile defense planning. This is in line with the MDA's BMDS performance assessment strategy, which is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of BMDS configurations, engagement conditions, and target phenomena.

Modeling and Simulation (M&S) activities support all phases of BMDS element and component development, including development of modifications to the element and component programs' subsystem designs, flight test missions, ground tests, wargames, exercises, and performance assessments. Models and simulations are tailored to the specific needs of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definitions studies, to high-fidelity models used to support engineering development or testing, and are integrated into the BMD Digital Simulations Architecture. Digital simulations support Program Assessment events, which provide critical system level performance data to all elements, the System Engineer, M&S developers, OTA and Warfighter. Further, the M&S Digital tools are accredited for each application and for specific objectives; tools are put through a rigorous Verification and Validation (V&V) process, including reviewing coding and specifications, and comparing analyses against actual flight test results. Planning support is required to assist in V&V plan development, test execution, analysis for V&V reports and program office M&S certification. The Digital End-to-End simulation of the BMDS requires a Performance Assessment Integrated V&V Plan and Report (at both element and system level), and a Performance Assessment system level Accreditation Plan and Report.

Modeling and Simulation Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

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Modeling and Simulation`s distinct capabilities are spread throughout the BMDS elements and provide the Warfighter with a range of assessment capabilities at the system and Element level. Accredited system-level models and simulations anchored to real-world events provide an accurate and comprehensive assessment of the BMDS. In addition, by anchoring these models and simulations with empirical flight and ground test data collected in accordance with test objectives defined by SE&I, Modeling and Simulation can provide the confidence that the BMDS will perform as predicted, without physically testing every possible condition that could occur. Future developments will focus on the model and simulation framework, BMDS element models and threat and environmental models to support anchoring. This approach ensures that the BMDS has the effectiveness and efficiency to meet the Warfighter`s needs.

Modeling and Simulation Program Major Program Goals:

Reduce integration lead times, mitigate schedule risk and enable higher tempo of Performance Assessment, Test and Fielding Events through rigorous M&S Requirements Engineering continue product line development, sustainment, maintenance and product support for:

- Extended Air Defense Simulation (EADSIM)
- Missile Defense Space warning Tool (models validated space-borne assets of BMDS)
- Threat Modeling Simulation System
- BMD International Simulation

(YX29 & MD29) PRODUCIBILITY AND MANUFACTURING TECHNOLOGY

The Producibility and Manufacturing Directorate`s ultimate goal is to help develop an effective and affordable missile defense system. To achieve this goal, Producibility and Manufacturing is helping to build and maintain a strong missile defense industrial base. Producibility and manufacturing conducts numerous industry days dedicated to small business companies to explain where value-added work opportunities exist across the BMDS. The Producibility and Manufacturing Directorate improves the design, integration, and assembly of the components used by the Ballistic Missile Defense Elements through producibility efforts that include, Design For Manufacturing and Assembly (DFMA), supply chain gap analysis, and changes to environmental laws and regulations. Producibility and Manufacturing conducts Industrial Capability Assessments (ICAs) across the BMDS Industrial Base in order to identify production gaps created by material supplier changes, loss of

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manufacturing base, and movement of United States production overseas. From these assessments, we will develop a gap analysis which focuses on methods that can be used to support our United States original equipment manufacturers (OEMs), their supplier base, and other organizations that produce end items for the BMDS. This project funds a number of key investment areas: 1) Power Systems, 2) Radiation Hardening (Rad Hard), 3) Manufacturing Process Improvements, 4) Electro-Optics/Infrared (EO/IR), 5) Radar and RF, 6) Propulsion, and 7) Advanced Materials and Structures. In each of these key investment areas, Producibility and Manufacturing conducts projects that provide key component and subsystem capabilities that ;we will incorporate into the applicable BMDS Element.

Producibility and Manufacturing Technology Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

Producibility and Manufacturing provides crosscutting BMDS manufacturing risk assessments, industrial capability assessments, and near term (1-3 year) producibility enhancements. Common, integrated programs across the BMDS Elements are provided to ensure mature industrial manufacturing capabilities are available to the programs through risk reduction, cost reduction/avoidance, and performance enhancement. Producibility and Manufacturing furthers efforts in commonality and spreads best practices for producibility and manufacturing across the BMDS Elements by cooperatively funding and leveraging efforts.

Producibility and Manufacturing Technology Program Major Program Goals:

Producibility and Manufacturing will help develop an effective and affordable missile defense system by building and maintaining a strong missile defense industrial base.

Producibility and Manufacturing plans to demonstrate the producibility and manufacturability of sensor subsystems/components in a flight experiment planned for FY 2010. This flight experiment will involve a maneuverable sensor with a radiation tolerant telescope, and a next generation Inertial Measurement Unit (IMU). The flight experiment will utilize common power and data bus interfaces in order to demonstrate the methodology to achieve commonality.

To improve engineering and manufacturing readiness of BMDS sensor systems, Producibility and Manufacturing is investing in the next generation of sensor technologies. For BMDS kill vehicles Producibility and Manufacturing has developed a strategy for incorporating lower cost materials and subsystems/components (cryocoolers, focal plane arrays, telescope materials) to improve missile affordability and performance. For ground-based sensors, Producibility and Manufacturing is investing in technologies to improve the performance and reliability of sensor components while reducing component costs.

Producibility and Manufacturing is investing in Divert and Attitude Control System components and material development in order to reduce manufacturing lead times and improve system performance. The materials development/characterization program will provide the next generation of high temperature composites/insulators and ablative components for rocket motors and engines. Component and subsystem risk reduction testing will demonstrate improvements in technical and manufacturing readiness of these components for missile defense applications.

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APPROPRIATION/BUDGET ACTIVITY
0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE
PE 0603890C: *Ballistic Missile Defense Enabling Programs*

Miniaturization and radiation hardening of next generation inertial measurement units are needed for missile defense applications. Producibility and Manufacturing is maturing technologies to enable miniature, radiation hardened IMUs for interceptors and satellites.

(YX32 & MD32) QUALITY, SAFETY AND MISSION ASSURANCE (QSMA)

The MDA Quality, Safety, and Mission Assurance Directorate is responsible for MDA system-wide quality, safety, and mission assurance. Quality, Safety, and Mission Assurance maintains an agency-wide perspective to ensure both program and system Mission Assurance requirements are met to achieve a capable BMDS. Quality, Safety, and Mission Assurance provides practical and robust safety, quality and mission assurance policy, guidance, expertise and assistance to the BMDS and all Elements. Each MDA program has direct Quality, Safety, and Mission Assurance support to ensure that quality, safety and mission assurance is addressed at all times. In addition, Quality, Safety, and Mission Assurance provide the program elements and their prime contractors, sub-contractors, and suppliers direct onsite support to meet emergent or surge safety requirements. Support includes experienced technical, non-advocate oversight on the design, development, test, manufacturing, integration and operations of critical facilities and suppliers.

Quality, Safety, and Mission Assurance Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

Quality, Safety and Mission Assurance efforts enable the development, testing and fielding of an effective, reliable, and safe missile defense capability. To ensure the BMDS can meet its performance, quality, safety, and mission assurance requirements, quality, safety and mission assurance principles and disciplines are being standardized and applied throughout each element and the entire BMDS. Implementation and maintenance of these principles and disciplines are essential to providing an effective war-fighting capability. There are over 27 MDA Assurance Representatives (MARs) located throughout the United States at major Government and supplier sites. MARs provide Defense Contract Management Agency (DCMA) and supplier's direct access to MDA and provide unfettered program insight to the MDA Director through weekly reporting.

Quality, Safety and Mission Assurance Major Program Goals:

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Improve Supplier / Contractor reliability through a comprehensive quality, safety and mission assurance Quality, Safety, and Mission Assurance program that employ Agency wide requirements for design, test, manufacturing, quality, safety and sustainment; provides on-site support to ensure compliance to imposed requirements, and maintains a comprehensive audit program to police overall Supplier performance.

Provide Agency leadership a non-advocate, independent organization that promotes industry best practices in Agency and Supplier operations.

(YX28 & MD28) INTELLIGENCE AND SECURITY

This project funds three specific areas: 1) The Intelligence Requirements Division which provides a single integrated mission area focus that interfaces with the Intelligence Community to acquire collection and analysis of data on foreign threat missiles. MDA uses this information to provide support to the Ballistic Missile Defense System (BMDS) architecture design, testing, modeling and wargaming to reduce risk and improve system performance; 2) Counterintelligence Division, which conducts defensive counterintelligence activities to detect, identify, assess, exploit, penetrate, degrade and counter or neutralize Foreign Intelligence and Security Service collection efforts, other intelligence activities, espionage, sabotage, sedition, subversion, assassination, and international terrorist activities directed against the MDA, its personnel, information, material, facilities, and activities worldwide; and 3) BMDS Security Assessment and Certification Directorate, which develops a comprehensive picture of the Information Assurance/Computer Network Defense architecture at all levels of BMDS. Together, these efforts provide critical information regarding threat ballistic missile system capabilities (Intelligence); protection of personnel and activities from espionage and terrorism through active and passive activities (Counterintelligence); and BMDS system vulnerabilities (BMDS Information Assurance Functional Manager).

Intelligence and Security Program Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

1) Intelligence: The MDA Intelligence Requirements Division acts as a clearing house for MDA's requirements for the Intelligence Community collection, analysis and production. The MDA Intelligence Requirements Division acts as agent for quality control and dissemination of Intelligence Community products for all properly cleared Government and contractor personnel and provides feedback to the Intelligence Community on subsequent questions, issues and other needs resulting from Intelligence Community reporting. The intelligence process begins when the Intelligence Community collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are given to the BMDS System Engineer who uses the threats to develop and change the BMDS. Through this activity, threat data is provided to support BMDS architecture design, testing, modeling, and wargaming. This information reduces the risk and improves system performance. It enables MDA Program Managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make

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informed decisions and invest limited resources on countering the most significant aspects of potential adversary capabilities. Other aspects of the Intelligence Program are designed to gain access to, and leverage, unique, Intelligence Community developed, owned and operated capabilities for the benefit and advocacy of the Missile Defense Community. Many are highly classified and require both access and expertise to exploit. The program supports the overarching MDA objectives of BMDS on Alert, continuing evolutionary development, and enhanced BMDS capabilities.

2) Counterintelligence: Pursuant to DoD Directive O-5240.2 , MDA`s Counterintelligence Division conducts defensive counterintelligence activities including Technical Surveillance Countermeasures and counterintelligence in Cyberspace activities to detect, identify, assess, exploit, penetrate, degrade and counter or neutralize Foreign Intelligence and Security Service collection efforts, other intelligence activities, espionage, sabotage, sedition, subversion, ssassination, and international terrorist activities directed against the MDA, its personnel, information, material, facilities, and activities worldwide.

3) BMDS Information Assurance: This division is responsible for executing the mission of the BMDS Information Assurance Functional Manager and enhancing the cyber infrastructure of the MDA BMDS. In this capacity, the division fulfills the DoD policy mandated role of the Information Assurance Manager and the BMDS Information System Security Engineering lead for Information Assurance/Computer Network Defense development activities, responsible for the Information Assurance/Computer Network Defense posture of BMDS. This division is responsible for assisting the BMDS to manage and deploy Information Assurance/Computer Network Defense requirements and solutions to fulfill DoD and Warfighter mandates, while enhancing the robustness and resilience of the cyber infrastructure. To fulfill this role, the division works in concert with Information Assurance Engineers and Information Assurance Managers to obtain a comprehensive picture of the overall Information Assurance/Computer Network Defense architecture at all levels of the BMDS, then influence the design by 1) identifying and developing Enabling Standards and Requirements to implement Defense-in-Depth within planned development cycles (Builds); 2) providing oversight, coordination and management of key information assurance management processes, technical requirements development, and policy-mandated responsibilities; 3) providing contract acquisition support to BMDS Elements ensuring Information Assurance is addressed throughout the procurement process, and; 4) interfacing with the Intelligence Community to define cyber security threats relevant to the BMDS.

Intelligence and Security Program Major Program Goals:

Ensure the Intelligence Community understands, accurately and timely fulfills MDA`s current and future prioritized intelligence requirements; broker BMDS test support collection requirements with the intelligence community and that MDA`s intelligence needs and finished intelligence requirements are understood while ensuring the intelligence community is involved in technical interchange meetings, etc. Continue the federated approach to supporting MDA by leveraging available national and DoD Counterintelligence resources to ensure counterintelligence products and services are fully integrated into all RDT&E programs and activities to protect

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classified information and critical technologies and to support and protect MDA and BMDS personnel, facilities, information and activities from threats posed by Foreign Intelligence and Security Service, terrorism and criminal activities. Consistently, comprehensively and definitively define information assurance for Continental United States (CONUS) and non-CONUS based on BMDS assets. Define Information Assurance/Computer Network Defense and cyber security infrastructure intelligence requirements to focus Intelligence Community collection, analysis and production to target MDA BMDS vulnerabilities; definitive and incorporate information assurance into the systems engineering process.

(YX30 & MD30) BMD INFORMATION MANAGEMENT SYSTEMS

The MDA Director has established a multi-year strategy to realign and consolidate information technology resources that directly support our mission, test, and administrative systems. This strategy is designed to achieve secure systems that provide greater efficiency and effectiveness in compliance with Federal mandates and DoD policies. The BMD Information Management Systems project includes all aspects of Information Technology.

BMD Information Management Systems Budget Justification and Contribution to the Ballistic Missile Defense System (BMDS):

The BMD Information Management Systems project integrates and supports every aspect of the BMD System (BMDS) by providing a secure and reliable Information Management/Information Technology (IM/IT) infrastructure and services necessary to enable the BMDS Elements and operators to collaborate and share information which is essential to accomplishing the complex integrated BMDS mission.

BMD Information Management Systems Major Program Goals:

Provide 8 hours a day, 5 days a week operational support to critical day-to-day Information Technology requirements for Agency missions
Ensure MDA mission, test and administrative systems are operated securely in accordance with DoD Information Assurance Certification and Accreditation policies.

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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	402.778	369.145	0.000	0.000	0.000
Current President's Budget	402.776	358.751	402.769	0.000	402.769
Total Adjustments	-0.002	-10.394	402.769	0.000	402.769
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		-10.394			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	6.014	0.000			
• SBIR/STTR Transfer	-6.016	0.000			
• Other Adjustment Detail	0.000	0.000	402.769	0.000	402.769

Change Summary Explanation

The FY2009 decrease of \$2 thousand is due to SBIR/STTR transfer and MDA reprogramming.

The FY2010 difference is due to Congressional Directed Reductions and Total Adjustments.

No FY 2011 data provided in PB10.

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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>				YX24: <i>Systems Engineering & Integration</i>			
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
YX24: <i>Systems Engineering & Integration</i>	107.835	98.684	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	206.519
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised Budget structure, the content planned for FY 2011- FY 2015 is captured in Project MD24.

A. Mission Description and Budget Item Justification

Systems Engineering and Integration's (SE&I) goals are to continue the development and improvement of the integrated Ballistic Missile Defense System and to prove the effectiveness of the system. The Agency will perform the analysis and engineering trades to support the Quadrennial Defense Review (QDR), the Ballistic Missile Defense Review, and policy decisions on European Ballistic Missile Defense. Our engineering focus will shift to enhancing regional Ballistic Missile Defense and providing system improvements to enable earlier Ballistic Missile Defense engagements. The SE&I provides analysis, decision-making and planning activities for real-world operations in support of the White House, Joint Staff, Military Services, North Atlantic Treaty Organization (NATO), Combatant Commanders (Military Utility Assessment), Operational Test Agencies, Director of Operational Test and Evaluation, Allies, and others. The SE&I is the single team that leads and executes this process and applies its technical expertise, tools, and facilities in a collaborative effort that cuts across many disciplines and specialties to realize this goal and also assists in the Quadrennial Defense Review (QDR) and Ballistic Missile Defense Review development.

Regional Defense: The Phased Adaptive Approach (PAA) was developed in response to the rapid proliferation of short and medium range ballistic missiles in Iran and the threat they pose to U.S. Allies and partners, as well as to U.S. deployed personnel and their accompanying families in the Middle East and in Europe. By leveraging recent advances in sensor and interceptor technologies, the United States will aggressively counter this growing regional threat with a more powerful and agile system. The United States is pursuing a four phased approach which will provide a more effective missile defense capability for defense of NATO territories and enhance U.S. homeland defense, it will be complementary of and interoperable with those being developed by NATO, be applicable in other theaters around the world, and will be more adaptable and flexible in order to counter threat advances and provide increased defended areas over time. The initial phase includes the deployment of current and proven missile defense, including the sea-based Aegis Weapons System, the SM-3 interceptor (Block IA), and sensors such as the forward-based Army Navy/Transportable Radar Surveillance system (AN/TPY-2). Subsequent phases will be implemented based on technical maturity, appropriate testing, and threat driven requirements. SE&I will play an integral in European Phased Adaptive Approach development by providing Ballistic Missile Defense System functional requirements and documenting them in Capability Planning Specifications for specific phases, defining test objectives to demonstrate regional defense performance, and verifying and assessing the capability of each European Phased Adaptive Approach phase.

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<p>SE&I Quality of Service: The systems engineering process which defines required system-wide Ballistic Missile Defense behavior, supports and evaluates Element and component system designs, and assesses and verifies system capability across the entire Ballistic Missile Defense System, involves five-phases: 1) Systems engineering planning/concept development; 2) design and specification; 3) integration 4) test and verification and assessment; and 5) operational integration (fielding). To provide context for the design process we: define the adversary capabilities and operating environments that could be used to defeat or degrade the Ballistic Missile Defense System; identify where performance gaps exist in Ballistic Missile Defense System capabilities; and determine what improvements are required to close those gaps. It is critically important that we provide requirements for top-down, overall architectural direction for system development and assessment in compliance with those requirements that ensure the Ballistic Missile Defense System functions as a seamless fully integrated system. To accomplish this, Ballistic Missile Defense System capabilities are matured using by developing system ``builds``. Each system build progresses through a series of rigorous requirements, design, and management review boards with pre-defined entrance and exit criteria. These events take place at both the system and element level. SE&I also stays focused on opportunities to insert and integrate high-payoff advanced technologies over time to: upgrade system components (sensors, weapons, and Command and Control, Battle Management, and Communications); improve Ballistic Missile Defense System overall performance; expand our protection coverage; increase military utility; and improve effectiveness against increasingly sophisticated and proliferating threats. The SE&I process provides requirements which other Ballistic Missile Defense System programs and elements depend upon to achieve successful integration.</p> <p>Products: Fundamental to the SE&I approach is development, coordination, and dissemination of fully vetted products at each stage of the SE&I process. These products document and communicate key information such as: technical goals and objectives, design trades and resulting decisions; design and interface requirements; integration plans and schedules; test objectives aimed at collecting the data needed to anchor models and simulations, assessment and test results and fielding plans. Ballistic Missile Defense Systems Engineering provides significant and thorough guidance through the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specifications for elements to design, build, integrate and test Ballistic Missile Defense System components. These products optimize performance at the system level and further ensure that the assessment of the designed Ballistic Missile Defense System is based on sufficient ground and flight testing. System Engineering monitors element and component compliance with Ballistic Missile Defense System level requirements through a series of requirements and design reviews both at the system and element levels. The Ballistic Missile Defense System Interface Control Documents (SICDs), the Capability Assessment Plan (CAP), the Modeling and Simulation Master Plan, and the Master Integration Plan provide additional guidance to the Ballistic Missile Defense System elements and components. System engineering has the key role in Ballistic Missile Defense System test development through the development and use of the Critical Engagement Conditions (CEC). The Critical Engagement Conditions ensure that the focus of the Ballistic Missile Defense System testing is on the data necessary not only to show proper system operation, but also to provide solid validation, verification and assessment data for digital simulations of the Ballistic Missile Defense System. These models along with a rigorous test and verification process will inform fielding decisions and operations. A brief description of some of the remaining, but as essential, System Engineering products follows:</p> <p>Adversary Capabilities Document (ACD) - provides an engineering threat reference that details overall feasible threat space and representative Systems including countermeasures</p>		

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<p>Concept Descriptions (CDs) - describe a proposed concept to enhance the Ballistic Missile Defense System in sufficient detail for evaluation</p> <p>Achievable Capabilities List (ACL) - a determination based on technology maturity, affordability, and emerging threat assessments of what capabilities desired by the warfighter are achievable</p> <p>Capability Planning Specification (CPS) - documents the preliminary requirements for new programs and specific upgrades for the system</p> <p>Adversary Data Package (ADP) - provides common and consistent threat data including countermeasures to drive Ballistic Missile Defense System weapon system designs, ground and flight tests, digital simulations, and pre-mission analysis.</p> <p>Analysis Guidance Document (AGD) - sets common analysis scenarios for system/element/component assessments and evaluations</p> <p>Element/Component Characterization for Analysis (E/CCA) - a database of system-level performance parameters that ensure correct and consistent medium fidelity analysis inputs across the Agency</p> <p>System Engineering Assessment Report (SEAR) - annual end-of-year report on progress toward achieving capability objectives</p> <p>Collaboration: SE&I's disciplined engineering process consists of setting technical objectives and goals, understanding the threat, exploring alternative system design concepts, performing design trades to inform the selection and implement the best design, verifying that the specified design is properly built, integrated and fielded, and then assessing how well the system meets performance goals. This occurs in a collaborative engineering environment in close partnership with key stakeholders such as the Element developers, Combatant Commands, and international partners. Systems Engineering and Integration further collaborates with the Director for Operations on the system content and activities described in the Ballistic Missile Defense System Master Plan (BMP).</p> <p>Unifying Missile Defense Functions: MDA has identified a set of Unifying Missile Defense Functions (UMDFs), which focus on key capabilities necessary to increase the effectiveness of the Ballistic Missile Defense System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These Unifying Missile Defense Function efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). Unifying Missile Defense Functions are implemented across the Ballistic Missile Defense System elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.</p> <p>New Technologies: We ensure that as new capabilities such as early intercept and precision tracking from space are added to the Ballistic Missile Defense System, the SE&I process remains focused on overall Ballistic Missile Defense System mission objectives and desired system performance. As these new capabilities are defined and requirements are allocated to the sensor, weapon and Command and Control, Battle Management, and Communications elements, a cadre of Ballistic Missile Defense System engineers works concurrently with the elements to produce the most effective solutions. When the capabilities are mature, we evaluate their readiness</p>		

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<p>for production using an engineering tool known as Engineering and Manufacturing Readiness Level (EMRL) assessment, so that risks are understood in advance of production decisions. We also develop anti-tamper approaches so that Ballistic Missile Defense System assets can be fielded outside the United States.</p> <p>Ballistic Missile Defense System Level Testing: The best way to dissuade the proliferation of ballistic missiles and deter their employment is through compelling testing and demonstration of integrated ballistic missile defense capabilities--weapons, sensors, and command and control, battle management and communications. Integrated Ballistic Missile Defense capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide the most accurate track of the enemy missile as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack-all connected by a unifying Command and Control, Battle Management, and Communications system. For example, integrating autonomous missile defense elements greatly expands the area protected and increases the protection levels without incurring additional force structure costs. In conjunction with the Director for Test, Systems Engineering and Integration supplies test objectives, critical engagement conditions, and empirical measurement events, and collaborates on the Integrated Master Test Plan (IMTP) to ensure the test program gathers the data necessary to anchor models and simulations used to predict Ballistic Missile Defense System performance.</p> <p>System Pre- and Post-Flight Reconstruction: SE&I will support System Pre-Flight predictions for system level flight tests using the test framework set up with the Ballistic Missile Defense System configuration for a particular flight test. This provides the confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to proof out the construct of the flight test to ensure if the required data and data management plan will support System Post-Flight Reconstruction (SPFR) objectives. System Post-Flight Reconstruction will use a hardware in the loop and/or a Digital Modeling and Simulation Environment to replicate the day of flight for the Ballistic Missile Defense System configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the critical engagement conditions and empirical measurement events back to the real world event. System Post-Flight Reconstruction is used for validation (anchoring) of models and simulations.</p> <p>Interdependencies: The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities--weapons, sensors, and Command and Control, Battle Management, and Communications. A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated Ballistic Missile Defense capabilities can result in an effort funded in one Program Element being critical to success of efforts in other Program Elements, referring to these connections as ``interdependencies``. Throughout the budget justification material, we have attempted to highlight System Engineering`s interdependencies with the MDA directorates and the Ballistic Missile Defense System elements and components in order to explain fully the relationship between different parts of the proposed program.</p> <p>SE&I Major Program Goals:</p> <p>Engineer the integrated and layered Ballistic Missile Defense System and prove Ballistic Missile Defense performance</p>		

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Provide system-level support to the Elements for definition, design, and integration of the Unifying Missile Defense Functions
 Provide technical direction to Element and Component developers
 Develop the Adversary Threat Capability documentation
 Produce controlling specifications and analysis to drive the Ballistic Missile Defense System design
 Lead collaborative and cross- Element and -Component engineering
 Provide technical support for the Operational Ballistic Missile Defense System
 Provide engineering development for an International Global Ballistic Missile Defense
 Verify and Assess through testing the Ballistic Missile Defense System performance and capabilities

Develop Ballistic Missile Defense System performance metrics and critical factors and identify critical engagement conditions
 Support Ballistic Missile Defense System testing and Modeling and Simulation by defining test objectives necessary to develop test campaigns to anchor Ballistic Missile Defense System-level models and simulations
 Identify Ballistic Missile Defense System capabilities and limitations
 Perform analysis of alternatives

Provide detailed analysis to support MDA Leadership and US policy decisions
 Create future Ballistic Missile Defense System architectural options

Develop architecture frameworks and operational concepts for emerging capabilities such as early intercept
 Establish technical roadmaps focusing on unified missile defense functions
 Develop functional requirements, define test objectives, and verify and assess capabilities for the Phased Adaptive Approach
 Establish and enforce design and construction standards
 Identify manufacturing risks using Engineering and Manufacturing Readiness Level assessments to analyze the maturity of Ballistic Missile Defense System Element and component manufacturing processes
 Develop anti-tamper approaches to enable international fielding of the Ballistic Missile Defense System

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Future Concepts and Planning	24.707	5.254	0.000	0.000	0.000

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B. Accomplishments/Planned Program (\$ in Millions)										
See Description Below										
<p><i>FY 2009 Accomplishments:</i></p> <p>Ballistic Missile Defense System Future Concepts and Planning conducted the first step of the SE&I process and directed the enterprise-wide lethality program, which ensured lethality, post-engagement assessment (miss/hit/kill assessment), collateral effects (such as debris) and consequences (identified for use by other agencies to determine management/mitigation strategies) ;were accounted for throughout the SE&I process. Lethality requirements were detailed in the Design and Specification documents, verified through system level test and verification objectives, and assessed as part of the Ballistic Missile Defense System performance assessment process.</p> <p>Developed architecture options for the Ballistic Missile Defense System European Capability Developed/updated top level capability descriptions and Capability Planning Specifications for future Ballistic Missile Defense System capabilities Executed the approved Corporate Lethality Plan Worked with the technology development community to ensure technology investments were prioritized and aligned to address Ballistic Missile Defense System-level capability needs Developed Sensor Quality of Service data for various Ballistic Missile Defense System Capabilities Continued to update the Systems Engineering Plan to be consistent with current policy</p> <p><i>FY 2010 Plans:</i></p> <p>Provide updates to the Ballistic Missile Defense System Description Document for new capabilities, including the Phased Adaptive Approach phases Develop and update Capability Planning Specifications for the Phased Adaptive Approach phases Conduct a System Concept Review for Phased Adaptive Approach Maintain the Systems Engineering Plan Execute the approved Agency Lethality Plan Update Technical Objectives and Goals (TOG) measurement standards</p>						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue sensor Quality of Service work Provide first principle Verification and Validation Plan for first principle code ``Virtual Data`` Develop and execute full scale US/UK Numerical Test Bed benchmark tests</p> <p><i>FY 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Countermeasures/Counter-Countermeasures (CM/CCM) See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Countermeasures/Counter-countermeasures (CM/CCM) program conducted tailored system engineering to facilitate Ballistic Missile Defense System capability improvement and worked collaboratively with the Threat Systems Engineering Team to synchronize and integrate adversary capability development efforts. These efforts ensured the representation of adversary capabilities was consistent with the MDA Adversary Capability Document. The Adversary Engineering efforts determined the range of feasible engineering approaches an adversary could be used to defeat or degrade the Ballistic Missile Defense System, identified gaps and risk in Ballistic Missile Defense System performance, and developed conceptual countermeasures to exploit these potential shortfalls. Adversary engineering was performed by two teams, each operating with a different perspective of adversary capabilities. The Red Team, restricted to using only information on the Ballistic Missile Defense System available from open sources, provided an outside perspective, analogous to an actual adversary. The Black Team developed countermeasures based on complete access to all technical and design data on the Ballistic Missile Defense System.</p>		2.000	1.785	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>The Blue Team, comprised of Ballistic Missile Defense System, element, and component technical experts, performed integrated performance and risk assessments of the Ballistic Missile Defense System against the projected adversary capabilities and conceptual countermeasures, identified and characterized counter-countermeasure options to mitigate Ballistic Missile Defense System risks posed by these adversary capabilities and countermeasures, and performed the system-level engineering required to identify the Ballistic Missile Defense System baseline changes to implement and integrate the options into the operational system baseline. An independent team of senior experts, the White Team, reviewed the adversary capabilities and conceptual countermeasures posed by the Black Team and risk assessments and mitigation approaches presented by the Blue Team; presents their independent assessments of performance risks associated with countermeasures to the MDA Director; and recommended priorities for MDA investments in counter-countermeasures that have a strong potential to mitigate these risks. This effort has been highly successful in previous years, allowing funds to be diverted to concentrate on implementation of Ballistic Missile Defense System Capability improvements.</p> <p>Completed the discrimination and lethality enhancement study of changes to the Ballistic Missile Defense System Technical Baseline and engineering trades to enhance existing Ballistic Missile Defense System integrated system discrimination capabilities</p> <p>Continued characterization of adversary countermeasures capabilities and phenomenology related to design, employment, and performance of countermeasures to Multiple Kill Vehicles and forward-based radars</p> <p>Completed study on the lethality of multiple kill vehicles and potential advanced discrimination techniques to improve Ballistic Missile Defense System lethality</p> <p><i>FY 2010 Plans:</i> Initiate assessment of Ballistic Missile Defense System capabilities in regional engagement scenarios against short to intermediate range adversary ballistic missiles</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>Conduct assessments of Ballistic Missile Defense System performance against projected adversary capabilities and conceptual countermeasures to the Ballistic Missile Defense System Discrimination Architecture posed by the Black Team to identify and evaluate performance risks and gaps Provide independent assessments and recommendations to the MDA Director on the Ballistic Missile Defense System Discrimination Architecture being pursued to achieve robust performance against adversary countermeasures and regional engagements</p> <p><i>FY 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Design and Specifications See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Ballistic Missile Defense System Design and Specification conducted the second phase of the SE&I process, using the data developed during the Planning process, and collaborative engineering with Elements and components to develop the functional, performance, interface, and design suitability requirements documented in the integrated Ballistic Missile Defense System Specification and Ballistic Missile Defense System Interface Control Documents (SICDs). Using standard, commercially available system engineering tools, Design and Specification developed, defined and specified in collaboration with the Ballistic Missile Defense System elements and components the detailed Ballistic Missile Defense System design, including functional decomposition and allocation; timing, error, and performance requirements; specialty engineering design constraints and considerations; information and data exchange requirements; and Ballistic Missile Defense System core technical standards identification. Both trade studies and performance analysis must be conducted and</p>		12.376	21.505	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>managed by SE&I at the Ballistic Missile Defense System level to ensure the proper Ballistic Missile Defense System design architecture and specifications across the various Element and Components. The Ballistic Missile Defense System design architecture, Ballistic Missile Defense System Specifications, and Ballistic Missile Defense System Interface Control Documents provide a common, executable set of requirements and design parameters to direct Element design and component specification development that drive the detailed design and integration across the participating Elements. The Design and Specification activities are then culminated in the System/Subsystem Requirements Review to ensure technical execution and understanding to realize the integrated Ballistic Missile Defense System reflected in the Ballistic Missile Defense System design. The Design and Specification efforts support the detailed engineering needed to realize the Unifying Missile Defense Functions to increase the effectiveness of the Ballistic Missile Defense System through the integration of MDA developed capabilities.</p> <p>Refocused Integrated Build C and D on regional conflicts Conducted Design Review to clarify function interrelationships among Ballistic Missile Defense System Element program content Conducted the initial System/Subsystem Requirements Review for Integrated Build D Continued technical evaluation of emerging adversary characteristics to be included within the Adversary Data Package Developed updates for the Ballistic Missile Defense System Description Document and the Ballistic Missile Defense System Specification to document build content approved for design initiation or refinement and integration into the Ballistic Missile Defense System Conducted engineering analyses and performed trade studies for system design and implementation products to include Ballistic Missile Defense System Specification and Ballistic Missile Defense System Interface Control Documents. Provided updated requirements - Target Capabilities Specification, Information Exchange Requirements and Design Parameters Experiments</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>Provided requirements traceability and certification guidance and conducted detailed System/Element requirements reconciliation to resolve technical disconnects and ensure common System/Element requirements understanding and intent</p> <p><i>FY 2010 Plans:</i> Support System Design Review following Element Preliminary Design Reviews to review the maturity of the technical baseline and plans for integration, test and verification prior to execution Perform technical evaluation of emerging adversary characteristics to be included within future Adversary Data Packages Develop revised Ballistic Missile Defense System Description Document, Ballistic Missile Defense System Specification, and Ballistic Missile Defense System Interface Control Documents to document build content approved for design initiation or refinement and integration into the Ballistic Missile Defense System and concepts demonstrating the most potential for improving Ballistic Missile Defense System effectiveness and integrate them into Ballistic Missile Defense System program planning Conduct engineering analyses and perform trade studies for system design and implementation products to include Ballistic Missile Defense System Specification and Ballistic Missile Defense System Interface Control Documents Provide updated requirements traceability and certification guidance and conducted detailed System/Element requirements reconciliation to resolve technical disconnects and ensure common System/Element requirements understanding and intent</p> <p><i>FY 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>							
Integration and Assessment See Description Below			24.976	22.801	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></p> <p>Integration and Assessment conducted the third, fourth and fifth phase of the SE&I process to prove Missile Defense works: 3) horizontal integration of software and hardware; 4) test integration, verification and model validation; and 5) operational assessments to facilitate fielding.</p> <p>Horizontal integration of software and hardware described those system engineering activities and events required to structure and test new functionality as an integrated, seamless, end-to-end Ballistic Missile Defense capability composed of Elements and components working together to effect simultaneous ballistic missile defense engagements. SE&I built a time-phased Master Integration Plan that defined integration phases for incremental Ballistic Missile Defense System capabilities and allocates the functionality and performance requirements captured in the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specification to those integration phases. These bundled sets of capability with their associated model data validation requirements then became the basis for defining the required test program in the Integrated Master Test Plan and Ballistic Missile Defense System Level Testing. Part of the horizontal integration phase is participation in Element level design reviews to ensure Ballistic Missile Defense System specifications ;were being properly implemented. In addition SE&I conducted routine program execution and technical reviews with MDA leadership to review the status of developing the required hardware and software and making it available to enable integrated system testing.</p> <p>The Ballistic Missile Defense System performance evaluation strategy is to develop models and simulations of the Ballistic Missile Defense System and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of Ballistic Missile Defense System configurations, engagement conditions, and target phenomena. In the test integration, verification and model validation phase, Engineering studies and analysis enable the allocation of test requirements to individual test events, design of test architectures, and generation of appropriate scenarios for ground</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>and flight tests to collect the required model validation data. SE&I also works with the Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), to incorporate operational test requirements under development to ensure the incremental capability to be transferred to the warfighter will be operationally effective, suitable, and survivable. SE&I incorporates these requirements into a database and tracks sufficiency of data collected during each test event. Shortfalls in data collections are identified and reallocated to future test events until all identified model validation data is collected. Suitability data to enable Reliability, Availability and Maintainability (RAM) assessments is collected through a Joint Reliability and Maintainability Engineering Team (JRMET) and quarterly data scoring boards with the Elements so that the warfighting commanders have confidence in the predicted performance of the Ballistic Missile Defense System.</p> <p>During the test planning and execution phase, SE&I provides the needed system engineering assistance to the Test organization by ensuring tests are appropriately planned, test objectives are developed, critical engagement conditions and empirical measurement events are identified, test scenarios are certified, and ground test models are accredited for use. SE&I performs test configuration management, assesses test risks, and tracks anomalies occurring in pre-mission ground testing. SE&I review all test incident reports generated during test and analysis and tracks and reports progress toward resolution until closed. SE&I engineers and analysts collect and analyze data required for system verification, assessment and model validation.</p> <p>Performance Verification ensures the ``as built`` system is compliant with the system specification and assesses performance of the delivered capability. The verification is accomplished in two ways. First all system specification requirements are allocated and traced to equivalent specifications at the MDA element and component level. Then when the element or component verification activity is complete, the result is rolled up and reported at the system level. When all allocated shalls are verified, the system specification is verified. Second, performance requirements are allocated to performance assessments (PA) events which assess Element and System performance against a specified set of</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>realistic threat scenarios and environments. The performance assessment events use performance models which were verified, validated and accredited using the data collected by the test program.</p> <p>In the final engineering phase, SE&I uses a compilation of flight tests, ground tests, performance assessments and other analyses as described in the Capability Assessment Plan to perform a technical assessment of the incrementally delivered capability and provides an a system engineering assessment report summarizing the verification and assessment activities. Together with the Military Utility Assessments and operational test and evaluation assessments, the Warfighter obtains technical knowledge of the system`s capabilities that facilitates development and deployment decisions by the Department of Defense. This assessment activity links the warfighting community and the Systems Engineering team and provides sustaining engineering and analytical services for configuration management, operations and sustainment of Ballistic Missile Defense System capabilities before, during and after transition of fielded capability.A permanent on-site presence in the Warfighter Support Center enhances our ability to provide Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD) quick responses to Ballistic Missile Defense System operational capability questions. Additionally, the transition of an available defensive capability to the Warfighter is facilitated by advocating user-requested changes and modifications to the designed system through the Prioritized Capabilities List, Modification and Fielding Request Lists and the Warfighter Involvement Process.</p> <p>Provided system-level engineering inputs to integration task forces charged with facilitating the design, integration, test and fielding of cross-cutting integrating capabilities (e.g., Concurrent Test, Training, and Operation, Discrimination Capability Engineering, and Engage on System Track) Updated the Master Integration Plan (MIP) to incorporate changes in planned Ballistic Missile Defense System capability deliveries, and the Planning Allocation Matrix (PAM) tool to support 2009-2015 integration, test, assessment, and verification activities Published an end-of-year System Engineering Assessment Report (SEAR) of Ballistic Missile Defense System performance demonstrated in Ballistic Missile Defense System-level testing and analyses</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Performed test configuration management, assessed test risks, and tracked and resolved anomalies occurring in ground testing thereby reducing flight test risks</p> <p>Finalized the development of the System Specifications and associated interface requirements for Ballistic Missile Defense System Integrated Build D capabilities</p> <p>Defined test objectives and provided scenario support for all system level test events, including identification of critical engagement conditions and empirical measurement events</p> <p><i>FY 2010 Plans:</i></p> <p>Provide system-level engineering inputs to Integration Task Forces charged with facilitating the design, integration, test and fielding of cross-cutting integrating capabilities (e.g., Concurrent Test, Training, and Operation, Discrimination Capability Engineering, and Engage on System Track)</p> <p>Update the Master Integration Plan (MIP) to incorporate any changes in planned delivery of Ballistic Missile Defense System content, and the Planning Allocation Matrix (PAM) tool to support 2010-2015 integration, test, assessment, and verification activities</p> <p>Perform test configuration management, assess test risks, and track and resolve anomalies occurring in ground testing in order to reduce flight test risks</p> <p>Provide engineering inputs for Integrated Master Test Plan updates</p> <p>Define test objectives and provide scenario support for all system level test events, to include identification of critical engagement conditions and empirical measurements events</p> <p>Define and execute required performance assessments to support Capability Delivery Readiness Reviews and incremental capability deliveries</p> <p>Conduct integration, provide test execution support, and verify European Phased Adaptive Approach capabilities</p> <p><i>FY 2011 Base Plans:</i></p> <p>The program content in this project is reported under Project MD24 in PB11.</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Systems Assessment and Analysis See Description Below <i>FY 2009 Accomplishments:</i> Systems Assessment and Analysis produced analyses for all phases of the systems engineering process. It ;was the only analytic team looking across system/element/product programs to support the Ballistic Missile Defense System architecture and systems engineering process with force-on-force effectiveness analyses, identification of system level gaps and shortfalls to defeat adversary capabilities, formulation of system alternatives and their relative contributions, engineering trade studies, Warfighter/war-game analysis support and rapid responses to senior Department (MDA Director/Deputy Director, Defense Secretary) and external (State Department, National Security Council) questions and scenarios. Further, Ballistic Missile Defense System Assessment and Analysis provided engineering and analysis for new capability definitions, Ballistic Missile Defense System Specifications, and Test Planning and Certification; developed threat scenarios; and accomplished trade studies for Element and system-level reviews, such as Technical Interchange Meetings (TIMs), System Requirement Reviews (SRR) and Sub System Readiness Reviews (SSRR). The Systems Assessment and Analysis team is responsible for maintaining and updating the Ballistic Missile Defense System Effectiveness Metric Standard (EMS), which defines requirements and recommendations for methodologies and practices used in the computation and presentation of performance effectiveness metrics. It also updated and maintained the Element/Component Characterizations for Analysis (E/CCA), a database of system-level performance parameters that ensure correct and consistent analysis inputs. The Systems Assessment and Analysis team also provided the MDA Director with the technical basis and rationale for developing and balancing the integrated, layered Ballistic Missile Defense System.		14.710	20.296	0.000	0.000	0.000

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Conducted over 500 system level performance analyses to support Ballistic Missile Defense System Architecture and Systems Engineering; responded to Warfighter requests; and addressed questions from the Executive Branch, Legislative Branch, and delegations from international partners</p> <p>Developed over 1,400 separate documents and briefings (including 174 Department of Defense, 21 Congressional, 18 other country, 5 Executive Branch)</p> <p>Updated the Element/Component Characterizations for Analysis (E/CCA)</p> <p>Completed an update and revision of the Effective Metric Standard (EMS) necessary for systematic presentation of alternatives to MDA senior leaders and the Combatant Commanders</p> <p><i>FY 2010 Plans:</i></p> <p>Continue to conduct system level performance analysis to support Ballistic Missile Defense System Architecture and Systems Engineering</p> <p>Predict performance for each Phased Adaptive Approach phase as input to System architecture and design efforts</p> <p>Update the Element/Component Characterizations for Analysis (E/CCA)</p> <p>Continue to maintain the Effective Metric Standard (EMS) necessary for systematic presentation of alternatives to MDA senior leaders and the Combatant Commanders</p> <p>Provide independent engineering technical assessments in Ballistic Missile Defense System and Element programs to examine critical areas as designated by the Director for Engineering</p> <p><i>FY 2011 Base Plans:</i></p> <p>The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i></p> <p>NA</p>						
Program Management		16.747	11.163	0.000	0.000	0.000

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>		PROJECT YX24: <i>Systems Engineering & Integration</i>						
B. Accomplishments/Planned Program (\$ in Millions)										
See Description Below										
<p><i>FY 2009 Accomplishments:</i> Program Management provides overall program operations support to the Missile Defense Agency Systems Engineering and Integration (SE&I) program to include planning, programming, budgeting and execution system (PPBES) support, contract management, Congressional and Inspector General responses and correspondence, information and document management, policy and procedures, security, and government human relations functions. In addition, manages 2086 MDA Baselines (Development, Operational) and provide configuration control support for Ballistic Missile Defense System Headquarters level.</p> <p>Developed Ballistic Missile Defense System solutions to special projects (North Korean Launch Operations) Responded to Congressional, Inspector General, and Department of Defense actions Implemented consistent task management across all programs and contracts including performance indicators and regular reporting Provided project/program management and control for all SE&I Maintained Master Schedule for Systems Engineering products and coordinated with the overall MDA Integrated Program Policy Performed Contracting Officer's Representative functions for all project support functions including contract cost oversight Maintained information library of all official engineering documents and briefings Managed personnel and MDA site and information security Directed development of engineering core competencies within the workforce</p> <p><i>FY 2010 Plans:</i> Develop Ballistic Missile Defense System solutions to special projects Respond to Congressional, Inspector General, and Department of Defense actions</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>Implement consistent task management across all programs and contracts including performance indicators and regular reporting Provide project/program management and control for all SE&I Maintain Master Schedule for System Engineering products and coordinate with the overall MDA Integrated Program Policy Perform contracting officer`s representative functions for all project support functions including contract cost oversight Maintain information library of all official engineering documents and briefings Direct development of engineering core competencies within the workforce</p> <p><i>FY 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>International See Description Below</p> <p><i>FY 2009 Accomplishments:</i> International System Engineering identified potential technical opportunities to strengthen/improve the globalization of the US Ballistic Missile Defense System through collaborative international partnerships. International Systems Engineering also provided technical content and analyses to facilitate international discussions led by the MDA Deputy for International Affairs, integrated and interoperable with North Atlantic Treaty Organization. Technical analyses enable both the US and foreign partners to understand existing system capabilities, architectural performance, operational concepts, identification of potential opportunities for collaboration; and to also discuss, develop, and execute program plans supporting more effective defenses to defeat adversary capabilities.</p>		0.651	0.657	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>Conducted discussions with new partners in the Middle East to support policy development and acquisition decisions given their growing interest in ballistic missile defense</p> <p>Continued to support ongoing UK Sea Base, Japan, North Atlantic Treaty Organization Missile Defense Study, and future tasking stemming from the 2009 North Atlantic Treaty Organization Summit</p> <p>Investigated planning for at sea test of UK`s Type 45 destroyer and its Sampson Radar as a long range search and track asset.</p> <p>Continued discussions with European partners on international flight test cooperation, architecture studies and analyses, and lethality/consequence of intercept issues</p> <p>Continued to support US-Japan systems integration projects through leadership of the Technical Sub-Group, participation in the Standard Missile 3 (SM-3) Cooperative Development (SCD) and execution of Joint System Analyses</p> <p>Initiated discussions with Republic of Korea about conduct of a Joint Program Analysis focused on improved missile defense of the Korean peninsula</p> <p>Conducted Joint Systems Analysis Program with Japan, focused upon Japan defense and US homeland defense contributions</p> <p><i>FY 2010 Plans:</i></p> <p>Conduct discussions with Gulf nations interested in population, critical asset and force protection from adversary ballistic missiles</p> <p>Continue discussions with France, United Kingdom, Netherlands and other European nations on cooperation in future international flight tests, architectural studies and analyses, and lethality/ consequence of intercept issues</p> <p>Examine opportunities to improve Ballistic Missile Defense System capabilities through International collaboration</p> <p>Continue to support US-Japan systems integration projects through leadership of the Technical Sub-Group, participation in the Standard Missile 3 (SM-3) Cooperative Development and execution of Joint System Analyses</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 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Threat</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Threat Systems Engineering provides critical inputs to the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process. The Threat team uses intelligence community data to define adversary missile capabilities and directly supports the development of the Ballistic Missile Defense System Description Document and System Specification. Common threat engineering produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense System and sub-system concept and requirements, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives Ballistic Missile Defense System ground tests, flight tests, digital simulations, and pre-mission analysis activities. Common Threat is also used to develop the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specification, and support European and Russian cooperative activities, North Korean and Iranian pre- and post-flight launch analysis, and the enhanced Israeli Interceptor program. Threat systems engineering also develops scenarios for system and element utilization for compliance and assessment evaluations of Ballistic Missile Defense System capability to defend homeland, deployed forces, and friends and allies (including the European Phased Adaptive Approach).</p>				11.668	15.223	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>Developed an agency-wide Common Threat baseline to provide data for Ballistic Missile Defense System design, verification, and assessment</p> <p>Completed the Build D Adversary Data Package update to document adversary missile capabilities and characterizations consistent with projected threat environment for the Ballistic Missile Defense System</p> <p>Produced all the threat data required to enable Ballistic Missile Defense System Ground Test ;04 (GT-04), Ballistic Missile Defense System Performance Assessment 10 (PA-10), Fiscal Year 2009 war games and exercises, and the implementation of Improved Ballistic Missile Defense System discrimination</p> <p>Produced scenario data for Element and Component design and assessment for Ballistic Missile Defense System Integrated Build D, Aegis BMD 5.1, and Far Term Sea-Based Terminal</p> <p>Developed threat data for special projects</p> <p>Validated that Ballistic Missile Defense System test targets for FTM-15, FTG-06, and FTT-10a are threat representative</p> <p><i>FY 2010 Plans:</i></p> <p>Maintain and update the agency-wide common and consistent Ballistic Missile Defense System threat to provide data for future Ballistic Missile Defense System design, verification, and assessment</p> <p>Continue to update adversary missile capabilities and characterizations consistent with projected threat environment for the Ballistic Missile Defense System Builds</p> <p>Produce all the threat data required to enable Ballistic Missile Defense System Ground Tests (GTX-04b and GTX-04c), Ballistic Missile Defense System Performance Assessment 2009 and 2010 (PA-09 and PA-10), and Fiscal Year 2010 war games and exercises as documented in the Ballistic Missile Defense System Integrated Master Test Plan</p> <p>Produce scenario data for Element and Component design and assessment for Ballistic Missile Defense System Build D updates, including all phases of the European Phased Adaptive Approach</p> <p>Develop threat data for special projects</p>					

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Validate that Ballistic Missile Defense System test targets for IFTM-03, FTG-06, and FTT-11/12 are threat representative <i>FY 2011 Base Plans:</i> The program content in this project is reported under Project MD24 in PB11. <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	107.835	98.684	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

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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016

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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 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>
• 0603912C: <i>BMD European Comm Support</i>											
• 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
• 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

The execution of program activities is a collaborative effort involving subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and Industry. This combination of resources forms an integrated team to accomplish the necessary engineering for the Ballistic Missile Defense System. In addition, extensive involvement by the major defense contractors responsible for the development of the Ballistic Missile Defense System, Elements, and major components is required. Countermeasure/Counter-Countermeasure initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems directorate and Ballistic Missile Defense System Element Program Offices.

E. Performance Metrics

N/A

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Future Concepts and Planning Industry YX24	TBD/CPAF	Boeing VA	29.691	3.152	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Future Concepts and Planning CSS-1 YX24	TBD/CPFF	CSC VA	8.137	0.841	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Future Concepts and Planning CSS-2 YX24	TBD/CPFF	Cobham VA	8.486	0.841	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Future Concepts and Planning FFRDC/ UARC-1 YX24	TBD/TBD	MIT/LL MA	0.988	0.210	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Future Concepts and Planning FFRDC/ UARC-2 YX24	TBD/TBD	JHU/APL VA	0.988	0.210	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	TBD/TBD	IDA VA	1.000	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</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			
Future Concepts and Planning FFRDC/ UARC-3 YX24													
Countermeasures/ Counter-Countermeasures (CM/ CCM) Industry YX24	TBD/CPAF	Boeing VA	11.579	0.607		0.000		0.000		0.000	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/ CCM) CSS-1 YX24	TBD/CPFF	CSC VA	8.855	0.464		0.000		0.000		0.000	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/ CCM) CSS-2 YX24	TBD/CPFF	Cobham VA	8.855	0.464		0.000		0.000		0.000	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/ CCM) FFRDC/UARC-1 YX24	TBD/TBD	IDA VA	1.362	0.071		0.000		0.000		0.000	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/ CCM) FFRDC/UARC-2 YX24	TBD/TBD	SNL CA	0.681	0.036		0.000		0.000		0.000	Continuing	Continuing	Continuing
Countermeasures/ Counter-	TBD/TBD	DSTL UK	2.724	0.143		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</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			
Countermeasures (CM/CCM) UK Mod YX24													
BMDS Design and Specifications Industry YX24	TBD/CPAF	Boeing VA	17.518	13.830	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications CSS-1 YX24	TBD/CPFF	CSC VA	1.412	2.375	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications CSS-2 YX24	TBD/CPFF	Cobham VA	1.397	2.428	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC/ UARC-1 YX24	TBD/TBD	Aerospace CA	0.350	0.000	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC/ UARC-2 YX24	TBD/TBD	JHU-APL VA	0.984	0.417	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC/ UARC-3 YX24	TBD/TBD	MIT-LL MA	0.413	0.718	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC/ UARC-4 YX24	TBD/TBD	MITRE NJ	0.184	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Design and Specifications Other DOD YX24	TBD/TBD	NSWC IN	2.000	1.737	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</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			
Integration and Assessment Industry YX24	TBD/CPAF	Boeing VA	18.510	8.665	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment CSS-1 YX24	TBD/CPFF	CSC VA	12.227	5.700	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment CSS-2 YX24	TBD/CPFF	Cobham VA	13.285	6.156	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC-1 YX24	TBD/TBD	Aerospace CA	2.017	0.912	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC-2 YX24	TBD/TBD	JHU-APL VA	1.383	0.684	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC-3 YX24	TBD/TBD	MIT-LL MA	0.579	0.228	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC-4 YX24	TBD/TBD	SNL CA	0.883	0.456	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Systems Assessment and Analysis Industry YX24	TBD/CPAF	Boeing VA	14.143	9.742	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Systems Assessment and Analysis CSS-1 YX24	TBD/CPFF	CSC VA	7.662	5.277	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</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			
Systems Assessment and Analysis CSS-2 YX24	TBD/CPFF	Cobham VA	7.662	5.277	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
International CSS YX24	TBD/CPFF	Cobham VA	0.103	0.053		0.000		0.000		0.000	Continuing	Continuing	Continuing
International FFRDC/UARC YX24	TBD/TBD	JHU-APL VA	1.219	0.604		0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat Industry YX24	TBD/CPAF	Boeing VA	9.104	6.650	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat CSS-1 YX24	TBD/CPFF	CSC VA	2.038	1.489	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat CSS-2 YX24	TBD/CPFF	Cobham VA	1.154	0.843	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat FFRDC/UARC-1 YX24	TBD/TBD	JHU-APL VA	1.409	1.029	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat FFRDC/UARC-2 YX24	TBD/TBD	MIT-LL MA	0.739	0.540	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat FFRDC/UARC-3 YX24	TBD/TBD	SNL CA	0.852	0.623	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Threat CSS-3 YX24	TBD/CPFF	Schafer VA	5.542	4.049	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			208.115	87.521		0.000		0.000		0.000			

Remarks

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Program Management CSS-1 YX24	TBD/CPFF	CSC VA	5.118	1.786	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management CSS-2 YX24	TBD/CPFF	Cobham VA	17.272	6.028	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management CSS-3 YX24	TBD/CPFF	Paradigm VA	0.957	0.335	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management FFRDC/UARC-1 YX24	TBD/TBD	Aerospace VA	5.118	1.786	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management FFRDC/UARC-2 YX24	TBD/TBD	JHU-APL VA	0.960	0.335	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management FFRDC/UARC-3 YX24	TBD/TBD	MITRE VA	1.599	0.558	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management FFRDC/UARC-4 YX24	TBD/TBD	USU-SDL VA	0.960	0.335	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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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			31.984	11.163		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	
Project Cost Totals	240.099	98.684		0.000		0.000		0.000				

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Capability Assessment Plan (CAP) / Update - FY2009		■																										
Capability Assessment Plan (CAP) / Update - FY2010							■																					
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2009				■																								
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2010								■																				
BMD System Interface Control Documents (SICD) - FY2009	■																											
BMD System Interface Control Documents (SICD) - FY2010							■																					
Master Integration Plan (MIP) - FY2009		■																										
Master Integration Plan (MIP) - FY2010							■																					
Adversary Data Package (ADP) - FY2009	■																											
Adversary Data Package (ADP) - FY2010							■																					
Deliver Special Studies Report				■																								
System Engineering Assessment Report (SEAR) - FY2009	■																											
System Engineering Assessment Report (SEAR) - FY2010							■																					
BMD System Description Document (BMD S-DD) - FY2009	■																											

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
BMD System Description Document (BMD S-DD) - FY2010						■																						
Incremental Capability Delivery Support												■																
Provide Independent Assessments to MDA - FY2009				■																								
Provide Independent Assessments to MDA - FY2010												■																
BMD System Specification (BMD SS) - FY2009	■																											
BMD System Specification (BMD SS) - FY2010							■																					
Element Preliminary Design Reviews							■																					
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2009		■																										
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2010							■																					
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2009				■																								
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2010												■																
Subsystem Requirements Review		■																										
Deliver Engineering Change Plans for CCM Improvements - FY2009				■																								

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Deliver Engineering Change Plans for CCM Improvements - FY2010								■																				
PAA Capability Planning Specifications (CPS) - FY2010								■																				
PAA System Concept Review (SCR)					■																							

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Capability Assessment Plan (CAP) / Update - FY2009	2	2009	2	2009
Capability Assessment Plan (CAP) / Update - FY2010	2	2010	2	2010
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2009	4	2009	4	2009
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2010	4	2010	4	2010
BMD System Interface Control Documents (SICD) - FY2009	1	2009	1	2009
BMD System Interface Control Documents (SICD) - FY2010	2	2010	2	2010
Master Integration Plan (MIP) - FY2009	2	2009	2	2009
Master Integration Plan (MIP) - FY2010	2	2010	2	2010
Adversary Data Package (ADP) - FY2009	1	2009	1	2009
Adversary Data Package (ADP) - FY2010	1	2010	1	2010
Deliver Special Studies Report	4	2009	4	2009
System Engineering Assessment Report (SEAR) - FY2009	1	2009	1	2009
System Engineering Assessment Report (SEAR) - FY2010	1	2010	1	2010
BMD System Description Document (BMD S-DD) - FY2009	1	2009	1	2009
BMD System Description Document (BMD S-DD) - FY2010	2	2010	2	2010
Incremental Capability Delivery Support	4	2010	4	2010
Provide Independent Assessments to MDA - FY2009	4	2009	4	2009
Provide Independent Assessments to MDA - FY2010	4	2010	4	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX24: <i>Systems Engineering & Integration</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
BMD System Specification (BMD SS) - FY2009	1	2009	1	2009
BMD System Specification (BMD SS) - FY2010	1	2010	1	2010
Element Preliminary Design Reviews	2	2010	2	2010
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2009	2	2009	2	2009
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2010	2	2010	2	2010
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2009	4	2009	4	2009
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2010	4	2010	4	2010
Subsystem Requirements Review	2	2009	2	2009
Deliver Engineering Change Plans for CCM Improvements - FY2009	4	2009	4	2009
Deliver Engineering Change Plans for CCM Improvements - FY2010	4	2010	4	2010
PAA Capability Planning Specifications (CPS) - FY2010	4	2010	4	2010
PAA System Concept Review (SCR)	1	2010	1	2010

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</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
<i>MD24: System Engineering & Integration</i>	0.000	0.000	124.040	0.000	124.040	155.241	144.571	157.903	167.762	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised Budget structure, the content previously planned in Project YX24 for FY 2009 - FY 2010 is now captured in Project MD24 for FY 2011 - FY 2015.

For FY 2011, BMDS Engineering Technology Protection and Standards (Anti-Tamper, Engineering Manufacturing Readiness Level Assessments, Commonality and Standards) was transferred from Producibility and Manufacturing Technology (MD29) to Systems Engineering and Integration (MD24).

For FY 2011 - FY 2015, the Ballistic Missile Defense System (BMDS) Capability Assessment (BCA) Integrated Master Test Plan (IMTP) was transferred from Test and Targets (MD04) to Systems Engineering & Integration (MD24).

A. Mission Description and Budget Item Justification

Systems Engineering and Integration's (SE&I) goals are to continue the development and improvement of the integrated Ballistic Missile Defense System and to prove the effectiveness of the system. The Agency will perform the analysis and engineering trades to support the Quadrennial Defense Review (QDR), the Ballistic Missile Defense Review, and policy decisions on European Ballistic Missile Defense. Our engineering focus will shift to enhancing regional Ballistic Missile Defense and providing system improvements to enable earlier Ballistic Missile Defense engagements. The SE&I provides analysis, decision-making and planning activities for real-world operations in support of the White House, Joint Staff, Military Services, North Atlantic Treaty Organization, Combatant Commanders (Military Utility Assessment), Operational Test Agencies, Director of Operational Test and Evaluation, Allies, and others. The SE&I is the single team that leads and executes this process and applies its technical expertise, tools, and facilities in a collaborative effort that cuts across many disciplines and specialties to realize this goal.

Regional Defense: The Phased Adaptive Approach (PAA) was developed in response to the rapid proliferation of short and medium range ballistic missiles in Iran and the threat they pose to U.S. Allies and partners, as well as to U.S. deployed personnel and their accompanying families in the Middle East and in Europe. By leveraging recent advances in sensor and interceptor technologies, the United States will aggressively counter this growing regional threat with a more powerful and agile system. The United States is pursuing a four phased approach which will provide a more effective missile defense capability for defense of North Atlantic Treaty Organization territories and enhance U.S. homeland defense, it will be complementary of and interoperable with those being developed by North Atlantic Treaty Organization, be

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<p>applicable in other theaters around the world, and will be more adaptable and flexible in order to counter threat advances and provide increased defended areas over time. The initial phase includes the deployment of current and proven missile defense, including the sea-based Aegis Weapons System, the SM-3 interceptor (Block IA), and sensors such as the forward-based Army Navy/Transportable Radar Surveillance system (AN/TPY-2). Subsequent phases will be implemented based on technical maturity, appropriate testing, and threat driven requirements. SE&I will play an integral in European Phased Adaptive Approach development by providing Ballistic Missile Defense System functional requirements and documenting them in Capability Planning Specifications for specific phases, defining test objectives to demonstrate regional defense performance, and verifying and assessing the capability of each European Phased Adaptive Approach phase.</p> <p>SE&I Process: The systems engineering process which defines required system-wide Ballistic Missile Defense behavior, supports and evaluates Element and component system designs, and assesses and verifies system capability across the entire Ballistic Missile Defense System, involves five-phases: 1) Systems engineering planning/concept development; 2) design and specification; 3) integration 4) test and verification and assessment; and 5) operational integration (fielding). To provide context for the design process SE&I: defines the adversary capabilities and operating environments that could be used to defeat or degrade the Ballistic Missile Defense System; identifies where performance gaps exist in Ballistic Missile Defense System capabilities; and determines what improvements are required to close those gaps. SE&I provides requirements for top-down, overall architectural direction for system development and assessment in compliance with those requirements that ensure the Ballistic Missile Defense System functions as a seamless fully integrated system. To accomplish this, Ballistic Missile Defense System capabilities are matured using system `builds`. Each system build progresses through a series of rigorous requirements, design, and management review process with pre-defined entrance and exit criteria. These events take place at both the system and element level. SE&I also stays focused on opportunities to insert and integrate high-payoff advanced technologies over time to: upgrade system components (sensors, weapons, and C2BMC); improve Ballistic Missile Defense System overall performance; expand our protection coverage; increase military utility; and improve effectiveness against increasingly sophisticated and proliferating threats. The SE&I process provides requirements which other Ballistic Missile Defense System programs and elements depend upon to achieve successful integration.</p> <p>Products: Fundamental to the SE&I approach is development, coordination, and dissemination of fully vetted products at each stage of the SE&I process. These products document and communicate key information such as: technical goals and objectives, design trades and resulting decisions; design and interface requirements; integration plans and schedules; test objectives aimed at collecting the data needed to anchor models and simulations, assessment and test results and fielding plans. Ballistic Missile Defense Systems Engineering provides significant and thorough guidance through the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specifications for elements to design, build, integrate and test Ballistic Missile Defense System components. These products optimize performance at the system level and further ensure that the assessment of the designed Ballistic Missile Defense System is based on sufficient ground and flight testing. System Engineering monitors element and component compliance with Ballistic Missile Defense System level requirements through a series of requirements and design reviews both at the system and element levels. The Ballistic Missile Defense System Interface Control Documents (SICDs), the Capability Assessment Plan (CAP), the Modeling and Simulation Master Plan, and the Master Integration Plan provide additional guidance to the Ballistic Missile Defense System elements and components. System engineering has the key role in Ballistic Missile Defense System test design and development through the use of the Critical Engagement Conditions (CEC). The critical engagement conditions ensure that the focus of the Ballistic Missile Defense System testing is on the data necessary not only to show proper system operation, but also to provide solid validation, verification and assessment data for digital simulations of the Ballistic Missile Defense</p>		

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<p>System. These models along with a rigorous test and verification process will inform fielding decisions and operations. A brief description of some of the remaining, but as essential, System Engineering products follows:</p> <p>Adversary Capabilities Document (ACD) - provides an engineering threat reference that details overall feasible threat space and representative Systems including countermeasures Concept Descriptions (CDs) - describe a proposed concept to enhance the Ballistic Missile Defense System in sufficient detail for evaluation Achievable Capabilities List (ACL) - a determination based on technology maturity, affordability, and emerging threat assessments of what capabilities desired by the warfighter are achievable Capability Planning Specification (CPS) - documents the preliminary requirements for new programs and specific upgrades for the system Adversary Data Package (ADP) - provides common and consistent threat data including countermeasures to drive Ballistic Missile Defense System weapon system designs, ground and flight tests, digital simulations, and pre-mission analysis Analysis Guidance Document (AGD) - sets common analysis scenarios for system/element/component assessments and evaluations Element/Component Characterizations for Analysis (E/CCA) - a database of system-level performance parameters that ensure correct and consistent medium fidelity analysis inputs across the Agency System Engineering Assessment Report (SEAR) - annual end-of-year report on progress toward achieving capability objectives</p> <p>Collaboration: SE&I's disciplined engineering process consists of setting technical objectives and goals, understanding the threat, exploring alternative system design concepts, performing design trades to inform the selection and implement the best design, verifying that the specified design is properly built, integrated and fielded, and then assessing how well the system meets performance goals. This occurs in a collaborative engineering environment in close partnership with key stakeholders such as the Element developers, Combatant Commands, and international partners. Systems Engineering and Integration further collaborates with the Director for Operations on the system content and activities described in the Ballistic Missile Defense System Master Plan (BMP).</p> <p>Unifying Missile Defense Functions: MDA has identified a set of Unifying Missile Defense Functions (UMDFs), which focus on key capabilities necessary to increase the effectiveness of the Ballistic Missile Defense System (including probability of engagement success, increase in defended area and raid size capacity, additional redundancy of architecture, unity of command) through the integration of MDA developed capabilities. These Unifying Missile Defense Function efforts are Sensor Registration (reporting of sensor errors / biases), Correlation (ensuring the information from multiple sensors seeing a threat relates to the same object), System Track (creating a single engageable track of a threat from multiple reports provided by different land, sea, and space based multiple sensors), Discrimination (identifying object details to determine the target from debris or decoys), Battle Management (combining the best sensors and shooters to ensure the highest probability of a kill), Hit / Kill Assessment (determining if the target selected was destroyed after missile impact), and Communications (providing the worldwide connection of sensors and shooters to command authorities). Unifying Missile Defense Functions are implemented across the Ballistic Missile Defense System elements to create and utilize system level data and decisions that allow Combatant Commanders the ability to automatically and manually optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic threats.</p>		

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<p>New Technologies: SE&I ensures that as new capabilities such as early intercept and precision tracking from space are added to the Ballistic Missile Defense System and the SE&I process remains focused on overall Ballistic Missile Defense System mission objectives and desired system performance. As these new capabilities are defined and requirements are allocated to the sensor, weapon and Command and Control Battle Management Communications elements, a cadre of Ballistic Missile Defense System engineers works concurrently with the elements to produce the most effective solutions. When the capabilities are mature, we evaluate their readiness for production using an engineering tool known as Engineering and Manufacturing Readiness Level (EMRL) assessment, so that risks are understood in advance of production decisions. We also develop anti-tamper approaches so that Ballistic Missile Defense System assets can be fielded outside the United States.</p> <p>Ballistic Missile Defense System Level Testing: The best way to dissuade the proliferation of ballistic missiles and deter their employment is through compelling testing and demonstration of integrated ballistic missile defense capabilities--weapons, sensors, and command and control, battle management and communications. Integrated Ballistic Missile Defense capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide the most accurate track of the enemy missile as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack-all connected by a unifying Command and Control, Battle Management, and Communications system. For example, integrating autonomous missile defense elements greatly expands the area protected and increases the protection levels without incurring additional force structure costs. In conjunction with the Director for Test, Systems Engineering and Integration supplies test objectives, critical engagement conditions, and empirical measurement events, and collaborates on the Integrated Master Test Plan (IMTP) to ensure the test program gathers the data necessary to anchor models and simulations used to predict Ballistic Missile Defense System performance.</p> <p>System Pre- and Post-Flight Reconstruction: SE&I will support System Pre-Flight predictions for system level flight tests using the test framework set up with the Ballistic Missile Defense System configuration for a particular flight test. This provides the confidence in Flight Test execution by predicting element performance and exercising element interfaces. This work is also used to proof out the construct of the flight test to ensure the collected data and data management plan will support System Post-Flight Reconstruction (SPFR) objectives. System Post-Flight Reconstruction will use a hardware in the loop and/or a Digital Modeling and Simulation Environment to replicate the day of flight for the Ballistic Missile Defense System configuration, modified to represent the actual environmental conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the critical engagement conditions and empirical measurement events back to the real world event. System Post-Flight Reconstruction is used for validation (anchoring) of models and simulations.</p> <p>Interdependencies: The best way to dissuade, deter, and defeat ballistic missile threats is through integrated ballistic missile defense capabilities--weapons, sensors, and Command and Control Battle Management and Communications (C2BMC). A potential or actual attack may cross regions and may fly higher and faster than stand-alone, autonomous capabilities operated by a single Military Service can defend against. Integrated Ballistic Missile Defense capabilities can result in an effort funded in one Program Element being critical to success of efforts in other Program Elements, referring to these connections as `interdependencies`. Throughout the budget justification material, we have attempted to highlight System Engineering`s interdependencies with the MDA directorates and the Ballistic Missile Defense System elements and components in order to explain fully the relationship between different parts of the proposed program.</p>		

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<p>SE&I Major Program Goals:</p> <p>Engineer the integrated and layered Ballistic Missile Defense System and prove Ballistic Missile Defense performance</p> <p>Provide system-level support to the Elements for definition, design, and integration of the Unifying Missile Defense Functions</p> <p>Provide technical direction to Element and Component developers</p> <p>Develop the Adversary Threat Capability documentation</p> <p>Produce controlling specifications and analysis to drive the Ballistic Missile Defense System design</p> <p>Lead collaborative and cross- Element and -Component engineering</p> <p>Provide technical support for the Operational Ballistic Missile Defense System</p> <p>Provide engineering development for an International Global Ballistic Missile Defense</p> <p>Verify and Assess through testing the Ballistic Missile Defense System performance and capabilities</p> <p>Develop Ballistic Missile Defense System performance metrics and identify critical engagement conditions</p> <p>Support Ballistic Missile Defense System testing and Modeling and Simulation by defining test objectives necessary to develop test campaigns to anchor Ballistic Missile Defense System-level models and simulations</p> <p>Identify Ballistic Missile Defense System capabilities and limitations</p> <p>Perform analysis of alternatives</p> <p>Provide detailed analysis to support MDA Leadership and US policy decisions</p> <p>Create future Ballistic Missile Defense System architectural options</p> <p>Develop architecture frameworks and operational concepts for emerging capabilities such as early intercept</p> <p>Establish technical roadmaps focusing on unified missile defense functions</p> <p>Develop functional requirements, define test objectives, and verify and assess capabilities for the Phased Adaptive Approach</p> <p>Establish and enforce design and construction standards</p> <p>Identify manufacturing risks using Engineering and Manufacturing Readiness Level assessments to analyze the maturity of Ballistic Missile</p> <p>Defense System Element and component manufacturing processes</p> <p>Develop anti-tamper approaches to enable international fielding of the Ballistic Missile Defense System</p>		

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Integration and Assessment See Description Below <i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX24 in PB10. <i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10. <i>FY 2011 Base Plans:</i> Integration and Assessment conducts the third, fourth and fifth phase of the SE&I process to prove Missile Defense works: 3) horizontal integration of software and hardware; 4) test integration, verification and model validation; and 5) operational assessments to facilitate fielding. Horizontal integration of software and hardware describes those system engineering activities and events required to structure and test new functionality as an integrated, seamless, end-to-end Ballistic Missile Defense capability composed of Elements and components working together to effect simultaneous ballistic missile defense engagements. SE&I builds a time-phased Master Integration Plan that defines integration phases for incremental Ballistic Missile Defense System capabilities and allocates the functionality and performance requirements captured in the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specification to those integration phases. These bundled sets of capability with their associated model data validation requirements then become the basis for defining the required test program in the Integrated Master Test Plan and Ballistic Missile Defense System Level Testing. Part of the horizontal integration phase is participation in Element level design reviews to ensure Ballistic Missile Defense System specifications are being properly implemented. In addition, SE&I conducts routine program execution and technical reviews	0.000	0.000	41.489	0.000	41.489

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>with MDA leadership to review the status of developing the required hardware and software and making it available to enable integrated system testing.</p> <p>The Ballistic Missile Defense System performance assessment strategy is to develop models and simulations of the Ballistic Missile Defense System and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of Ballistic Missile Defense System configurations, engagement conditions, and target phenomena. In the test integration, verification and model validation phase, Engineering studies and analysis enable the allocation of test requirements to individual test events, design of test architectures, and generation of appropriate scenarios for ground and flight tests to collect the required model validation data. SE&I also works with the Services' Operational Test Agencies (OTA), with the support of the Director of Operational Test and Evaluation (DOT&E), to incorporate operational test requirements under development to ensure the incremental capability to be transferred to the warfighter will be operationally effective, suitable, and survivable. SE&I incorporates these requirements into a database and tracks sufficiency of data collected during each test event. Shortfalls in data collections are identified and reallocated to future test events until all identified model validation data is collected. Suitability data to enable Reliability, Availability and Maintainability (RAM) assessments is collected through a Joint Reliability and Maintainability Engineering Team (JRMET) and quarterly data scoring boards with the Elements so that the warfighting commanders have confidence in the predicted performance of the Ballistic Missile Defense System.</p> <p>During the test planning and execution phase, SE&I provides the needed system engineering assistance to the Test organization by ensuring tests are appropriately planned, test objectives are developed, critical engagement conditions and empirical measurement events are identified, test scenarios are certified, and ground test models are accredited for use. SE&I performs test configuration management, assesses test risks, and tracks anomalies occurring in pre-mission ground testing. SE&I review all test incident reports generated during test and analysis and tracks and reports</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>progress toward resolution until closed. SE&I engineers and analysts collect and analyze data required for system verification, assessment and model validation.</p> <p>Performance Verification ensures the `as built` system is compliant with the system specification and assesses performance of the delivered capability. The verification is accomplished in two ways. First all system specification requirements are allocated and traced to equivalent specifications at the MDA element and component level. When the element or component verification activity is complete, the result is rolled up and reported at the system level and when all allocated specification shall are verified, the system specification is verified. Second, performance requirements are allocated to performance assessments (PA) events which assess Element and System performance against a specified set of realistic threat scenarios and environments. The performance assessment events use performance models which are verified, validated and accredited using the data collected by the test program.</p> <p>In the final engineering phase, SE&I uses a compilation of flight tests, ground tests, performance assessments and other analyses as described in the Capability Assessment Plan to perform a technical assessment of the incrementally delivered capability and provides a system engineering assessment report summarizing the verification and assessment activities. Together with the Military Utility Assessments and Operational Test and Evaluation assessments, the Warfighter obtains knowledge of the system`s capabilities that facilitates development and deployment decisions by the Department of Defense. This assessment activity links the warfighting community and the Systems Engineering team and provides sustaining engineering and analytical services for configuration management, operations and sustainment of Ballistic Missile Defense System capabilities. A permanent on-site presence in the Warfighter Support Center enhances the Agency`s ability to provide Joint Functional Component Command-Integrated Missile Defense (JFCC-IMD) quick responses to Ballistic Missile Defense System operational capability questions. Additionally, the transition of an available defensive capability to the Warfighter is facilitated by advocating user-requested changes</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>and modifications to the designed system through the Prioritized Capabilities List, Modification and Fielding Request Lists and the Warfighter Involvement Process.</p> <p>Update the Master Integration Plan (MIP) to incorporate changes in planned delivery of Ballistic Missile Defense System content</p> <p>Provide engineering inputs for Integrated Master Test Plan updates using the Planning Allocation Matrix (PAM) tool to identify integration, test, assessment, and verification activities</p> <p>Provide SE&I test configuration management, risk assessment, and anomaly and test incident report review, assessment and closure to enable execution of the ground and flight test program</p> <p>Allocate and track Critical Engagement Condition (CEC) and Empirical Measurement Events (EME) data requirements and sufficiency for ground and flight tests in accordance with the Integrated Master Test Plan</p> <p>Define test objectives and evaluation criteria for all system level test events</p> <p>Design and certify scenarios for Ground Test Events to meet required data collection and satisfy SE&I, Operational Test Agencies and Warfighter objectives</p> <p>Collect Ballistic Missile Defense System Suitability Data through the Joint Reliability and Maintainability Engineering Team (JRMET) Data Scoring Boards</p> <p>Define and execute required performance assessments to support incremental capability deliveries</p> <p>Update Ballistic Missile Defense System verification status monthly</p> <p>Provide system-level engineering inputs to Integration Task Forces charged with facilitating the design, integration, test and fielding of cross-cutting integrating capabilities (e.g., Concurrent Test, Training and Operations; Discrimination Capability Engineering; and Engage on Ballistic Missile Defense System Track)</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
BMDS Design and Specifications	0.000	0.000	26.843	0.000	26.843

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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 program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Ballistic Missile Defense System Design and Specification conducts the second phase of the SE&I process, using the data developed during the Planning process, and collaborative engineering with Elements and components to develop the functional performance, interface, and design suitability requirements documented in the integrated Ballistic Missile Defense System Specification and Ballistic Missile Defense System Interface Control Documents (SICDs). Using standard, commercially available system engineering tools, Design and Specification develops, defines and specifies in collaboration with the Ballistic Missile Defense System elements and components the detailed Ballistic Missile Defense System design, including functional decomposition and allocation; timing, error, and performance requirements; specialty engineering design constraints and considerations; information and data exchange requirements; and Ballistic Missile Defense System core technical standards identification. Both trade studies and performance analysis ;is managed by SE&I at the Ballistic Missile Defense System level to ensure the proper Ballistic Missile Defense System design architecture and specifications across the various Elements and Components. The Ballistic Missile Defense System design architecture, Ballistic Missile Defense System Specifications, and System Interface Control Documents provide a common, executable set of requirements and design parameters to direct Element design and component specification development that drive the detailed design and integration across the participating Elements. The Design and Specification activities are then culminated in System/Subsystem Requirements Reviews to ensure technical execution and understanding to realize Ballistic Missile Defense System Integration. ; Design and Specification</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>efforts support the detailed engineering needed to realize Unifying Missile Defense Functions ;and increase the effectiveness of the Ballistic Missile Defense System. ;</p> <p>Conduct Engineering Reviews for MDA Engineering:</p> <p>Conduct Ballistic Missile Defense System/Subsystem Design Review following Element Requirement Reviews to review the maturity of the technical baseline at both the System/Subsystem level and plans for integration, test and verification prior to execution</p> <p>Continue technical evaluation of emerging adversary characteristics to be included within future Adversary Data Packages</p> <p>Develop updates to Ballistic Missile Defense System Description Document, Ballistic Missile Defense System Specification, and Ballistic Missile Defense System Interface Control Documents to document build content approved for design, development ;and integration into the Ballistic Missile Defense System</p> <p>Conduct engineering analyses and perform trade studies for system design and ;development products to include Ballistic Missile Defense System Specification and Ballistic Missile Defense System Interface Control Documents</p> <p>Provide updated requirements traceability and certification guidance and conduct detailed System/Element requirements reconciliation to resolve technical disconnects and ensure common System/Element requirements interpretation.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Threat</p> <p>See Description Below</p>	0.000	0.000	21.837	0.000	21.837

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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 program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Threat Systems Engineering provides critical inputs to the planning, design and specification, integration and implementation, and test verification and assessment phases of the systems engineering process. The Threat Systems Engineering team uses intelligence community data to define adversary missile capabilities and directly supports the development of the Ballistic Missile Defense System Description Document and System Specification. Within the Threat team, the Common Threat engineering group produces common and consistent adversary trajectory and signature data to enable Ballistic Missile Defense System and sub-system concept and requirements definition, design, verification, and assessment. Common Threat data is contained in the Adversary Capability Document and Adversary Data Packages and drives Ballistic Missile Defense System ground tests, flight tests, digital simulations, and pre-mission analysis activities. Common Threat data is also used to develop the Ballistic Missile Defense System Description Document and Ballistic Missile Defense System Specification and support European and Russian cooperative activities, North Korean and Iranian pre- and post-flight launch analysis, and the enhanced Israeli Interceptor program. Threat Systems Engineering also develops scenarios for system and element utilization for compliance and assessment evaluations of Ballistic Missile Defense System capability to defend homeland, deployed forces, and friends and allies (including the ;Phased Adaptive Approach).</p> <p>Maintain and update the agency-wide common and consistent Ballistic Missile Defense System threat to provide data for future Ballistic Missile Defense System design, verification, and assessment Update adversary missile capabilities and characterizations consistent with projected threat environment for the Ballistic Missile Defense System Builds</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>Produce all the threat data required to enable Ballistic Missile Defense System Ground Tests, Flight Tests, Ballistic Missile Defense System Performance Assessment 2012, and FY 2011 war games and exercises (e.g., AR-04X), as documented in the Ballistic Missile Defense System Integrated Master Test Plan</p> <p>Produce scenario data for Element and Component design and assessment for Ballistic Missile Defense System Build D updates, including all phases of the Phased Adaptive Approach</p> <p>Develop threat data for special projects</p> <p>Validate that Ballistic Missile Defense System test targets are threat representative</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Systems Assessment and Analysis</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Systems Assessment and Analysis produces analyses for all phases of the systems engineering process. It is the only analytic team looking across system/element/product programs to support the Ballistic Missile Defense System architecture and systems engineering process with force-on-force effectiveness analyses, identification of system level gaps and shortfalls to defeat adversary capabilities, formulation of system alternatives and their relative contributions, engineering trade studies, Warfighter/war game analysis support and rapid responses to senior Department (MDA</p>		0.000	0.000	15.138	0.000	15.138

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>

B. Accomplishments/Planned Program (\$ in Millions)	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Director/Deputy Director, Defense Secretary) and external (State Department, National Security Council) questions and scenarios. Further, Ballistic Missile Defense System Assessment and Analysis provides engineering and analysis for new capability definitions, Ballistic Missile Defense System Specifications, and Test Planning and Certification; develops threat scenarios, and accomplishes trade studies for Element and system-level reviews, such as Technical Interchange Meetings (TIMs), System Requirement Reviews (SRR) and Sub System Readiness Reviews (SSRR). The Systems Assessment and Analysis team is responsible for maintaining and updating the Ballistic Missile Defense System Effectiveness Metric Standard (EMS), which defines requirements and recommendations for methodologies and practices used in the computation and presentation of performance effectiveness metrics. It also updates and maintains the Element/Component Characterizations for Analysis (E/CCA), a database of system-level performance parameters that ensure correct and consistent analysis inputs. The Systems Assessment and Analysis team also provides the MDA Director with the technical basis and rationale for developing and balancing the integrated, layered Ballistic Missile Defense System.</p> <p>Conduct system level performance analysis to support Ballistic Missile Defense System Architecture and Systems Engineering</p> <p>Predict performance for each ;Phased Adaptive Approach phase as input to System architecture and design effort</p> <p>Update the Element/Component Characterizations for Analysis (E/CCA)</p> <p>Maintain the Effective Metric Standard (EMS) necessary for systematic presentation of alternatives to MDA senior leaders and the Combatant Commanders</p> <p>Provide independent engineering technical assessments in Ballistic Missile Defense System and Element programs to examine critical areas as designated by the Director for Engineering</p> <p><i>FY 2011 OCO Plans:</i> NA</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>Future Concepts and Planning</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Ballistic Missile Defense System Future Concepts and Planning conducts the first step of the SE&I process and directs the enterprise-wide lethality program, which ensures lethality, post-engagement assessment (miss/hit/kill assessment), collateral effects (such as debris) and consequences (identified for use by other agencies to determine management/mitigation strategies) are accounted for throughout the SE&I process. Lethality requirements are detailed in the Design and Specification documents, verified through system level test and verification objectives, and assessed as part of the Ballistic Missile Defense System performance assessment process.</p> <p>Maintain the System Engineering Plan Produce an updated Ballistic Missile Defense System Lethality Program Plan to encompass lethality assessment, collateral effects and consequences Integrate `Virtual Data Sets` into fast running MDA Modeling and Simulation Engineering lethality codes Complete United States/United Kingdom Numerical Test Bed benchmark testing that provides unique, threat representative, data points crucial in anchoring first principle and fast running codes. These codes in turn will be used to provide kill assessment and lethality information to Ballistic Missile Defense System end-to-end and Hardware in the Loop (HWIL) simulations. Without these data points,</p>	0.000	0.000	3.192	0.000	3.192

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>there is risk of not providing quality simulations while backing up kill assessment assertions for system Sensors.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Knowledge Centers</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> In 2008, the Missile Defense Agency established four Knowledge Centers in distinct program areas of: Command and Control Battle Management and Communication (C2BMC), Interceptor, Space, and Sensors. The Knowledge Centers function as advisory resources on the potential technical risks to all Missile Defense Agency program elements, and identify and propose associated mitigation strategies in their respective domain. Additionally, the Knowledge Centers share technical lessons learned and work with the Director for Engineering to help foster development of the technical workforce and share knowledge across the program elements.</p> <p>Performed more than 75 independent technical assessments, identified more than 50 technical risks and associated mitigation techniques and participated in or led more than 25 failure review teams in support of individual BMDS program offices</p> <p>Served as mentoring agents for incoming Missile Defense Agency interns and provided in-depth technical advice to Missile Defense Agency program office personnel in technical domains not readily available to them via existing sources</p> <p><i>FY 2010 Plans:</i> Identify and mitigate element technical risk and serve as independent technical advisors to BMDS program offices</p>		0.000	0.000	7.638	0.000	7.638

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Increase technical mentoring of new Missile Defense Agency staff, to include development and presentation of BMDS technical lectures and coursework Provide support and leadership to failure review teams and other independent technical assessment activities</p> <p><i>FY 2011 Base Plans:</i> Identify and mitigate Element technical risk and serve as independent technical advisors to the BMDS program offices Increase technical mentoring of new Missile Defense Agency staff, to include development and presentation of BMDS technical lectures and coursework Provide support and leadership to failure review teams and other independent technical assessment activities</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Capability Assessment (BCA) Team See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX04 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX04 in PB10.</p>		0.000	0.000	4.043	0.000	4.043

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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 2011 Base Plans:</i> The BMDS Capability Assessment (BCA) Team conducts non-advocate assessments of the BMDS performance and fielding readiness, investigates BMDS performance issues, and proposes mitigation plans.</p> <p>Update the non-advocate assessment of the BMDS performance and fielding readiness and investigate BMDS performance issues and propose mitigation plans Support data collection in the development of the IMTP to anchor BMDS models Assess of digitally reconstructed model fidelity and mission day events results Support digital Modeling and Simulation S-based Performance Assessment events where assessed models are utilized</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Engineering Technology Protection and Standards</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX29 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX29 in PB10.</p> <p><i>FY 2011 Base Plans:</i> The BMDS Engineering Technology Protection and Standards consists of three individual programs; Ballistic Missile Defense System Anti-Tamper, Commonality and Design and Construction Standards, and Engineering Manufacturing Readiness Levels (EMRLs).</p>		0.000	0.000	2.860	0.000	2.860

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The goal of the Ballistic Missile Defense System Anti-Tamper program is to provide protection against reverse engineering of Ballistic Missile Defense System critical technologies that are vulnerable to exploitation as a result of battlefield loss, Foreign Military Sales (FMS), or cooperative development efforts. Robust Anti-Tamper solutions support coalition warfare and extend the effective operational life of the Ballistic Missile Defense System. Current efforts involve leveraging Department of Defense (DoD) investment in retrofit technology to protect sensitive information.</p> <p>The goal of Commonality and Design and Construction Standards effort is to promote cost savings while maintaining a high level of mission assurance. This effort includes investigating commonality of avionics parts, subsystems, and architectures across MDA. Prime candidates for commonality are the GN&C (Guidance, Navigation, and Control) hardware designs and avionics systems for the various radiation hardened booster, kill vehicles, and space-based concepts under consideration. This effort also provides for the development of MDA Core Standards for GN&C and avionics systems that will foster common designs across the MDA programs. Specific standards under consideration for development are: MDA Common Power Bus, Common Data Bus, and Common Communications Standards. Additionally, this effort includes in-depth technical expertise for inertial technology and for continued support of the MDA Common Inertial Measurement Unit (IMU) program.</p> <p>Engineering Manufacturing Readiness Levels are used to assess the maturity of MDA development programs and to report readiness for transition to production in a standard format across all MDA Elements. The application of Engineering and Manufacturing Readiness Levels provides a means of evaluating the engineering and manufacturing maturity of the Ballistic Missile Defense System Elements, systems, and components by assessing the program or product against quantifiable criteria.</p> <p>Anti-Tamper:</p> <p>Evaluate software modification efforts to determine likely effectiveness against reverse engineering</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>Develop low/no power Anti-Tamper technologies to enable active response and sensing capabilities for the Ballistic Missile Defense System</p> <p>Evaluate performance of multiple integrated Anti-Tamper technologies</p> <p>Engineering and Manufacturing Readiness Levels (EMRLs):</p> <p>Apply Engineering and Manufacturing Readiness Levels as a means of evaluating the engineering and manufacturing maturity of the Ballistic Missile Defense System Elements, systems, and components by assessing the program or product against quantifiable criteria</p> <p>Use Engineering and Manufacturing Readiness Levels to assess the maturity of MDA development programs and to report readiness for transition to production in a standard format across all MDA Elements</p> <p>Commonality and Design and Construction Standards:</p> <p>Use Independent Research and Development (IR&D) Common Inertial Measurement Unit flight experiment prototypes for preparing radiation hardening assessment ground testing of low-rate initial production Common Inertial Measurement Units. This reduces risk for correlating data from in-flight performance of an unhardened prototype with the predicted performance of the hardened unit.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>							
Countermeasures/Counter-Countermeasures (CM/CCM) See Description Below			0.000	0.000	1.000	0.000	1.000

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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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 program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX24 in PB10.</p> <p><i>FY 2011 Base Plans:</i> The Countermeasures/Counter-countermeasures (CM/CCM) program conducts tailored system engineering to facilitate Ballistic Missile Defense System capability improvement and works collaboratively with the Threat Systems Engineering Team to synchronize and integrate adversary capability development efforts. These efforts ensure the representation of adversary capabilities is consistent with the MDA Adversary Capability Document. The Adversary Engineering efforts determine the range of feasible engineering approaches an adversary could use to defeat or degrade the Ballistic Missile Defense System, identifies gaps and risk in Ballistic Missile Defense System performance, and develops conceptual countermeasures to exploit these potential shortfalls. Adversary Engineering is performed by the Black Team. The Black Team develops countermeasures based on complete access to all technical and design data on the Ballistic Missile Defense System.</p> <p>The Blue Team, comprised of Ballistic Missile Defense System, element, and component technical experts, performs integrated performance and risk assessments of the Ballistic Missile Defense System against the projected adversary capabilities and conceptual countermeasures, identifies and characterizes counter-countermeasure options to mitigate Ballistic Missile Defense System risks posed by these adversary capabilities and countermeasures, and performs the system-level engineering required to identify the Ballistic Missile Defense System baseline changes to implement and integrate the options into the operational system baseline. An independent team of senior experts, the White Team, reviews the adversary capabilities and conceptual countermeasures posed by the Black Team, and risk assessments and mitigation approaches presented by the Blue Team; presents their independent assessments of performance risks associated with countermeasures to the MDA</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Director; and recommends priorities for MDA investments in counter-countermeasures that have a strong potential to mitigate these risks.					
Complete strategy for addressing missile threats in the presence of countermeasures for regional engagement scenarios					
Update integrated strategy for early intercept, regional/theater defense and midcourse defense					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	124.040	0.000	124.040

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
	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

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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 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>
• 0603888C: <i>Ballistic Missile Defense Test and Targets</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226

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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 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>
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>											
• 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
• 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

SE&I services will be acquired by competitive means to the extent that is possible and practical.

The execution of program activities is a collaborative effort involving subject matter experts composed of Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA), and Industry. This combination of resources forms an integrated team to accomplish the necessary engineering for the Ballistic Missile Defense System. In addition, extensive involvement by the major defense contractors responsible for the development of the Ballistic Missile Defense System, Elements, and major components is required. Countermeasure/Counter-Countermeasure initiatives will be executed by various labs and industry contractors through the MDA Advanced Systems directorate and Ballistic Missile Defense System Element Program Offices.

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
<p>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.</p>		
E. Performance Metrics N/A		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Integration and Assessment Industry MD24	C/CPAF	Boeing VA	0.000	0.000		2.999	Apr 2011	0.000		2.999	Continuing	Continuing	Continuing
Integration and Assessment CSS MD24	C/CPFF	CSC VA	0.000	0.000		2.357	Apr 2011	0.000		2.357	Continuing	Continuing	Continuing
Integration and Assessment CSS - 2009876330489 MD24	C/CPFF	Cobham CA	0.000	0.000		1.214	Apr 2011	0.000		1.214	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC MD24	TBD/TBD	Aerospace CA	0.000	0.000		0.071	Oct 2010	0.000		0.071	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC - 2009876330497 MD24	TBD/TBD	JHU APL VA	0.000	0.000		0.286	Apr 2011	0.000		0.286	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</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			
Integration and Assessment FFRDC/ UARC - 2009876330502 MD24	TBD/TBD	MIT-LL MA	0.000	0.000		0.071	Apr 2011	0.000		0.071	Continuing	Continuing	Continuing
Integration and Assessment FFRDC/ UARC - 2009876330508 MD24	TBD/TBD	SNL CA	0.000	0.000		0.143	Apr 2011	0.000		0.143	Continuing	Continuing	Continuing
BMDS Design and Specifications Industry MD24	C/CPAF	Boeing VA	0.000	0.000		17.216	Apr 2011	0.000		17.216	Continuing	Continuing	Continuing
BMDS Design and Specifications CSS MD24	C/CPFF	CSC VA	0.000	0.000		1.379	Apr 2011	0.000		1.379	Continuing	Continuing	Continuing
BMDS Design and Specifications CSS - 2009876311542 MD24	C/CPFF	Cobham CA	0.000	0.000		4.832	Apr 2011	0.000		4.832	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC/ UARC - 2009855511195 MD24	TBD/TBD	MIT/LL MA	0.000	0.000		1.074	Apr 2011	0.000		1.074	Continuing	Continuing	Continuing
BMDS Design and Specifications Other DoD MD24	TBD/TBD	NSWC IN	0.000	0.000		1.000	Apr 2011	0.000		1.000	Continuing	Continuing	Continuing
BMDS Design and Specifications FFRDC MD24	TBD/TBD	LLNL CA	0.000	0.000		1.342	Apr 2011	0.000		1.342	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</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			
Threat Industry MD24	C/CPAF	Boeing VA	0.000	0.000		8.492	Apr 2011	0.000		8.492	Continuing	Continuing	Continuing
Threat CSS MD24	C/CPFF	CSC VA	0.000	0.000		2.208	Apr 2011	0.000		2.208	Continuing	Continuing	Continuing
Threat CSS - 2009876348723 MD24	C/CPFF	Cobham CA	0.000	0.000		4.076	Apr 2011	0.000		4.076	Continuing	Continuing	Continuing
Threat FFRDC/UARC MD24	TBD/TBD	JHU APL VA	0.000	0.000		0.340	Apr 2011	0.000		0.340	Continuing	Continuing	Continuing
Threat FFRDC/UARC - 2009876348731 MD24	TBD/TBD	MIT-LL MA	0.000	0.000		1.019	Apr 2011	0.000		1.019	Continuing	Continuing	Continuing
Threat FFRDC/UARC - 2009876348736 MD24	TBD/TBD	SNL CA	0.000	0.000		0.849	Apr 2011	0.000		0.849	Continuing	Continuing	Continuing
Systems Assessment and Analysis Industry MD24	C/CPAF	Boeing VA	0.000	0.000		4.458	Apr 2011	0.000		4.458	Continuing	Continuing	Continuing
Systems Assessment and Analysis CSS MD24	C/CPFF	CSC VA	0.000	0.000		3.268	Apr 2011	0.000		3.268	Continuing	Continuing	Continuing
Systems Assessment and Analysis CSS - 2009876376622 MD24	C/CPFF	Cobham CA	0.000	0.000		3.268	Apr 2011	0.000		3.268	Continuing	Continuing	Continuing
Systems Assessment and Analysis FFRDC/UARC MD24	TBD/TBD	Aerospace VA	0.000	0.000		0.028	Oct 2010	0.000		0.028	Continuing	Continuing	Continuing
Systems Assessment and Analysis FFRDC/	TBD/TBD	MITRE VA	0.000	0.000		1.032	Jan 2011	0.000		1.032	Continuing	Continuing	Continuing

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

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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			
UARC - 2009876376631 MD24													
Systems Assessment and Analysis FFRDC/UARC - 2009876376636 MD24	TBD/TBD	JHU-APL VA	0.000	0.000		0.877	Apr 2011	0.000		0.877	Continuing	Continuing	Continuing
Systems Assessment and Analysis CSS - (ISERG & TAST) MD24	C/CPFF	Vanguard VA	0.000	0.000		1.740		0.000		1.740	Continuing	Continuing	Continuing
Systems Assessment and Analysis CSS MD24	C/CPFF	STS, LLC VA	0.000	0.000		0.467		0.000		0.467	Continuing	Continuing	Continuing
Future Concepts and Planning Industry MD24	C/CPAF	Boeing VA	0.000	0.000		1.468	Apr 2011	0.000		1.468	Continuing	Continuing	Continuing
Future Concepts and Planning CSS MD24	C/CPFF	Cobham CA	0.000	0.000		0.830	Apr 2011	0.000		0.830	Continuing	Continuing	Continuing
Future Concepts and Planning FFRDC/UARC MD24	TBD/TBD	SNL CA	0.000	0.000		0.447	Apr 2011	0.000		0.447	Continuing	Continuing	Continuing
Future Concepts and Planning FFRDC/UARC MD24	TBD/TBD	LLNL CA	0.000	0.000		0.447	Apr 2011	0.000		0.447	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC MD24	TBD/TBD	Aerospace CA	0.000	0.000		1.681		0.000		1.681	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307334 MD24	TBD/TBD	JHU APL VA	0.000	0.000		1.223		0.000		1.223	Continuing	Continuing	Continuing

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

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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			
Knowledge Centers FFRDC/UARC - 20091295307338 MD24	TBD/TBD	Draper MA	0.000	0.000		0.458		0.000		0.458	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307342 MD24	TBD/TBD	GTRI GA	0.000	0.000		0.611		0.000		0.611	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307347 MD24	TBD/TBD	JPL CA	0.000	0.000		0.458		0.000		0.458	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307352 MD24	TBD/TBD	MIT/LL MA	0.000	0.000		0.992		0.000		0.992	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307356 MD24	TBD/TBD	MITRE VA	0.000	0.000		0.840		0.000		0.840	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307359 MD24	TBD/TBD	ORNL TN	0.000	0.000		0.458		0.000		0.458	Continuing	Continuing	Continuing
Knowledge Centers FFRDC/UARC - 20091295307364 MD24	Various/ Various	Various VA	0.000	0.000		0.917		0.000		0.917	Continuing	Continuing	Continuing
BMDS Engineering Technology Protection and Standards Anti-Tamper Support MD24	TBD/TBD	NSWC Crane IN	0.000	0.000		1.000		0.000		1.000	Continuing	Continuing	Continuing
BMDS Engineering Technology Protection	C/CPFF	DRC, Cobham CA	0.000	0.000		1.510		0.000		1.510	Continuing	Continuing	Continuing

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

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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			
and Standards CSS/ Travel MD24													
BMDS Engineering Technology Protection and Standards Commonality and Standards MD24	C/CPFF	DRAPER MA	0.000	0.000		0.350		0.000		0.350	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/CCM) CSS MD24	C/CPFF	CSC VA	0.000	0.000		0.250	Apr 2011	0.000		0.250	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/CCM) CSS - 2009876285863 MD24	C/CPFF	Cobham CA	0.000	0.000		0.390	Apr 2011	0.000		0.390	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/CCM) FFRDC/UARC MD24	TBD/TBD	IDA VA	0.000	0.000		0.180	Apr 2011	0.000		0.180	Continuing	Continuing	Continuing
Countermeasures/ Counter-Countermeasures (CM/CCM) FFRDC/UARC - 2009876285872 MD24	TBD/TBD	MIT-LL MA	0.000	0.000		0.180	Apr 2011	0.000		0.180	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		80.796		0.000		80.796			

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

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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			

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			
Integration and Assessment BMDS Level Testing MD24	C/CPAF	Boeing VA	0.000	0.000		15.720	Apr 2011	0.000		15.720	Continuing	Continuing	Continuing
Integration and Assessment BMDS Level Testing - 20098275381727 MD24	C/CPFF	CSC VA	0.000	0.000		12.085	Apr 2011	0.000		12.085	Continuing	Continuing	Continuing
Integration and Assessment BMDS Level Testing - 20098275381733 MD24	C/CPFF	Cobham CA	0.000	0.000		6.543	Apr 2011	0.000		6.543	Continuing	Continuing	Continuing
Threat BMDS Level Testing MD24	C/CPAF	Boeing VA	0.000	0.000		2.766	Apr 2011	0.000		2.766	Continuing	Continuing	Continuing
Threat BMDS Level Testing - 20098275411963 MD24	C/CPFF	CSC VA	0.000	0.000		0.728	Apr 2011	0.000		0.728	Continuing	Continuing	Continuing
	C/CPFF	Cobham	0.000	0.000		1.359	Apr 2011	0.000		1.359	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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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			
Threat BMDS Level Testing - 20098275411967 MD24		CA											
BMDS Capability Assessment (BCA) Team FFRDC/UARC MD24	TBD/TBD	Aerospace CA	0.000	0.000		0.578		0.000		0.578	Continuing	Continuing	Continuing
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295498991 MD24	TBD/TBD	MIT/LL MA	0.000	0.000		0.578		0.000		0.578	Continuing	Continuing	Continuing
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295498998 MD24	TBD/TBD	MITRE VA	0.000	0.000		0.578		0.000		0.578	Continuing	Continuing	Continuing
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295499003 MD24	TBD/TBD	JHU APL VA	0.000	0.000		0.578		0.000		0.578	Continuing	Continuing	Continuing
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295499009 MD24	TBD/TBD	DRAPER MA	0.000	0.000		0.577		0.000		0.577	Continuing	Continuing	Continuing
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295499014 MD24	TBD/TBD	LLNL CA	0.000	0.000		0.577		0.000		0.577	Continuing	Continuing	Continuing

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

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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			
BMDS Capability Assessment (BCA) Team FFRDC/UARC - 20091295499023 MD24	TBD/TBD	GTRI GA	0.000	0.000		0.577		0.000		0.577	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		43.244		0.000		43.244			

Remarks

NA

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

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	124.040	0.000	124.040			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Missile Defense Agency							DATE: February 2010		
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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-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency		DATE: February 2010
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Adversary Data Package (ADP) - FY2011									■																			
Adversary Data Package (ADP) - FY2012													■															
Adversary Data Package (ADP) - FY2013																	■											
Adversary Data Package (ADP) - FY2014																					■							
Adversary Data Package (ADP) - FY2015																									■			
BMD System Description Document (BMD S-DD) - FY2012													■															
BMD System Description Document (BMD S-DD) - FY2014																					■							
BMD System Design Review - FY2011													■															
BMD System Design Review - FY2012																	■											
BMD System Design Review - FY2013																					■							
BMD System Design Review - FY2014																									■			
BMD System Design Review - FY2015																												
BMD System Interface Control Documents (SICD) - FY2012																	■											
BMD System Interface Control Documents (SICD) - FY2014																									■			
BMD System Specification (BMD SS) - FY2012																	■											
BMD System Specification (BMD SS) - FY2014																									■			

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Capability Assessment Plan (CAP) / Update - FY2011									■																			
Capability Assessment Plan (CAP) / Update - FY2012													■															
Capability Assessment Plan (CAP) / Update - FY2013															■													
Capability Assessment Plan (CAP) / Update - FY2014																			■									
Capability Assessment Plan (CAP) / Update - FY2015																											■	
Element Preliminary Design Reviews - FY2011									■																			
Element Preliminary Design Reviews - FY2012													■															
Element Preliminary Design Reviews - FY2013															■													
Element Preliminary Design Reviews - FY2014																			■									
Element Preliminary Design Reviews - FY2015																											■	
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2011									■																			
													■															

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2012																												
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2013																												
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2014																												
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2015																												
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2011																												
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2012																												
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2013																												
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2014																												
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2015																												
Incremental Capability Delivery Support - FY2011																												
Incremental Capability Delivery Support - FY2012																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Incremental Capability Delivery Support - FY2013																												
Incremental Capability Delivery Support - FY2014																												
Incremental Capability Delivery Support - FY2015																												
Master Integration Plan (MIP) - FY2011																												
Master Integration Plan (MIP) - FY2012																												
Master Integration Plan (MIP) - FY2013																												
Master Integration Plan (MIP) - FY2014																												
Master Integration Plan (MIP) - FY2015																												
Provide Independent Assessments to MDA - FY2011																												
Provide Independent Assessments to MDA - FY2012																												
Provide Independent Assessments to MDA - FY2013																												
Provide Independent Assessments to MDA - FY2014																												
Provide Independent Assessments to MDA - FY2015																												
System Engineering Assessment Report (SEAR) - FY2011																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
System Engineering Assessment Report (SEAR) - FY2012													■															
System Engineering Assessment Report (SEAR) - FY2013																												
System Engineering Assessment Report (SEAR) - FY2014																												
System Engineering Assessment Report (SEAR) - FY2015																												
System/Subsystem Requirements Review - FY2011																												
System/Subsystem Requirements Review - FY2013																												
System/Subsystem Requirements Review - FY2015																												
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2011																												
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2012																												
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2013																												
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2014																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2015																												
Update PAA Capability Planning Specifications (CPS) - FY2011												■																
Update PAA Capability Planning Specifications (CPS) - FY2012															■													
Update to BMD System Description Document (BMD S-DD) - FY2011										■																		
Update to BMD System Description Document (BMD S-DD) - FY2013																	■											
Update to BMD System Description Document (BMD S-DD) - FY2015																										■		
Update to BMD System Interface Control Documents (SICD) - FY2011												■																
Update to BMD System Interface Control Documents (SICD) - FY2013																												
Update to BMD System Interface Control Documents (SICD) - FY2015																											■	
Update to BMD System Specification (BMD SS) - FY2011												■																
Update to BMD System Specification (BMD SS) - FY2013																												
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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Update to BMD System Specification (BMD SS) - FY2015																												
Update to Integrated Master Test Plan (IMTP) - FY2011									■																			
Update to Integrated Master Test Plan (IMTP) - FY2012													■															
Update to Integrated Master Test Plan (IMTP) - FY2013																	■											
Update to Integrated Master Test Plan (IMTP) - FY2014																					■							
Update to Integrated Master Test Plan (IMTP) - FY2015																									■			

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Adversary Data Package (ADP) - FY2011	1	2011	1	2011
Adversary Data Package (ADP) - FY2012	1	2012	1	2012
Adversary Data Package (ADP) - FY2013	1	2013	1	2013
Adversary Data Package (ADP) - FY2014	1	2014	1	2014
Adversary Data Package (ADP) - FY2015	1	2015	1	2015
BMD System Description Document (BMD S-DD) - FY2012	1	2012	1	2012
BMD System Description Document (BMD S-DD) - FY2014	1	2014	1	2014
BMD System Design Review - FY2011	3	2011	3	2011
BMD System Design Review - FY2012	3	2012	3	2012
BMD System Design Review - FY2013	3	2013	3	2013
BMD System Design Review - FY2014	3	2014	3	2014
BMD System Design Review - FY2015	3	2015	3	2015
BMD System Interface Control Documents (SICD) - FY2012	3	2012	3	2012
BMD System Interface Control Documents (SICD) - FY2014	3	2014	3	2014
BMD System Specification (BMD SS) - FY2012	2	2012	2	2012
BMD System Specification (BMD SS) - FY2014	2	2014	2	2014
Capability Assessment Plan (CAP) / Update - FY2011	2	2011	2	2011
Capability Assessment Plan (CAP) / Update - FY2012	2	2012	2	2012

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Capability Assessment Plan (CAP) / Update - FY2013	2	2013	2	2013
Capability Assessment Plan (CAP) / Update - FY2014	2	2014	2	2014
Capability Assessment Plan (CAP) / Update - FY2015	2	2015	2	2015
Element Preliminary Design Reviews - FY2011	2	2011	2	2011
Element Preliminary Design Reviews - FY2012	2	2012	2	2012
Element Preliminary Design Reviews - FY2013	2	2013	2	2013
Element Preliminary Design Reviews - FY2014	2	2014	2	2014
Element Preliminary Design Reviews - FY2015	2	2015	2	2015
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2011	2	2011	2	2011
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2012	2	2012	2	2012
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2013	2	2013	2	2013
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2014	2	2014	2	2014
Element/Component Characterization for Analysis (E/CCA) - 2Q - FY2015	2	2015	2	2015
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2011	4	2011	4	2011
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2012	4	2012	4	2012
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2013	4	2013	4	2013
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2014	4	2014	4	2014
Element/Component Characterization for Analysis (E/CCA) - 4Q - FY2015	4	2015	4	2015
Incremental Capability Delivery Support - FY2011	2	2011	2	2011
Incremental Capability Delivery Support - FY2012	2	2012	2	2012

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Incremental Capability Delivery Support - FY2013	2	2013	2	2013
Incremental Capability Delivery Support - FY2014	2	2014	2	2014
Incremental Capability Delivery Support - FY2015	2	2015	2	2015
Master Integration Plan (MIP) - FY2011	4	2011	4	2011
Master Integration Plan (MIP) - FY2012	4	2012	4	2012
Master Integration Plan (MIP) - FY2013	4	2013	4	2013
Master Integration Plan (MIP) - FY2014	4	2014	4	2014
Master Integration Plan (MIP) - FY2015	4	2015	4	2015
Provide Independent Assessments to MDA - FY2011	4	2011	4	2011
Provide Independent Assessments to MDA - FY2012	4	2012	4	2012
Provide Independent Assessments to MDA - FY2013	4	2013	4	2013
Provide Independent Assessments to MDA - FY2014	4	2014	4	2014
Provide Independent Assessments to MDA - FY2015	4	2015	4	2015
System Engineering Assessment Report (SEAR) - FY2011	1	2011	1	2011
System Engineering Assessment Report (SEAR) - FY2012	1	2012	1	2012
System Engineering Assessment Report (SEAR) - FY2013	1	2013	1	2013
System Engineering Assessment Report (SEAR) - FY2014	1	2014	1	2014
System Engineering Assessment Report (SEAR) - FY2015	1	2015	1	2015
System/Subsystem Requirements Review - FY2011	1	2011	1	2011
System/Subsystem Requirements Review - FY2013	1	2013	1	2013

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
System/Subsystem Requirements Review - FY2015	1	2015	1	2015
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2011	4	2011	4	2011
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2012	4	2012	4	2012
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2013	4	2013	4	2013
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2014	4	2014	4	2014
Technical Objectives & Goals / Effectiveness Metrics Standard Updates - FY2015	4	2015	4	2015
Update PAA Capability Planning Specifications (CPS) - FY2011	4	2011	4	2011
Update PAA Capability Planning Specifications (CPS) - FY2012	4	2012	4	2012
Update to BMD System Description Document (BMD S-DD) - FY2011	1	2011	1	2011
Update to BMD System Description Document (BMD S-DD) - FY2013	1	2013	1	2013
Update to BMD System Description Document (BMD S-DD) - FY2015	1	2015	1	2015
Update to BMD System Interface Control Documents (SICD) - FY2011	3	2011	3	2011
Update to BMD System Interface Control Documents (SICD) - FY2013	3	2013	3	2013
Update to BMD System Interface Control Documents (SICD) - FY2015	3	2015	3	2015
Update to BMD System Specification (BMD SS) - FY2011	2	2011	2	2011
Update to BMD System Specification (BMD SS) - FY2013	2	2013	2	2013
Update to BMD System Specification (BMD SS) - FY2015	2	2015	2	2015
Update to Integrated Master Test Plan (IMTP) - FY2011	1	2011	1	2011
Update to Integrated Master Test Plan (IMTP) - FY2012	1	2012	1	2012
Update to Integrated Master Test Plan (IMTP) - FY2013	1	2013	1	2013

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD24: <i>System Engineering & Integration</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Update to Integrated Master Test Plan (IMTP) - FY2014	1	2014	1	2014
Update to Integrated Master Test Plan (IMTP) - FY2015	1	2015	1	2015

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</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
<i>YX28: Intelligence & Security</i>	20.007	17.789	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	37.796
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised Budget structure, the content previously planned in Project YX28 for FY 2009 - FY 2010 is now captured in Project MD28 for FY 2011 - FY 2015.

A. Mission Description and Budget Item Justification

The Security and Intelligence Project captures three specific areas:

- 1) Intelligence
- 2) Counterintelligence
- 3) BMDS information assurance systems certification

Collectively, these efforts provide critical information regarding threat ballistic missile system capabilities (via intelligence), protection of personnel, activities, and technology from espionage and terrorism through active and passive activities (via counterintelligence); and BMDS system vulnerabilities (via BMDS certification). Specifically, the activities include:

1. Intelligence: The MDA Intelligence Requirements Division serves as a clearing house for MDA's requirements for the Intelligence Community collection, analysis and production. The MDA Intelligence Requirements Division serves as the quality control and dissemination agent of Intelligence Community products for all properly cleared Government and contractor personnel and provides feedback to the Intelligence Community on subsequent questions, issues and other requirements resulting from Intelligence Community reporting. The intelligence process begins when the Intelligence Community collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are provided to the BMDS System Engineer who uses the threats to develop and change the BMDS. Through this activity, threat data is provided to support BMDS architecture design, testing, modeling and wargaming. This information reduces the risk and improves system performance. It enables MDA Program Managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make informed decisions and invest limited resources on countering the most significant aspects of potential adversary capabilities. Other aspects of the

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
<p>Intelligence Division are designed to gain access to, and leverage unique Intelligence Community developed, owned and operated capabilities for the benefit and advocacy of the Missile Defense Community. Numerous Intelligence Community capabilities are highly classified and require both access and expertise to exploit. The Intelligence Requirements Division supports the overarching MDA objectives of BMDS on-Alert, evolutionary development, and enhanced BMDS capabilities.</p> <p>2. Counterintelligence. Pursuant to Executive Order 12333, (US Intelligence Activities), DoD Directive 5240.2 (DoD Counterintelligence), and other DoD Counterintelligence policy issuances, the MDA Counterintelligence Division is charged with undertaking activities as part of an integrated DoD and national effort, to detect, identify, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, other intelligence activities, sabotage, espionage, sedition, subversion and terrorist activities directed against MDA personnel, information, materials, facilities, and activities or against U.S. national security. As a member of the DoD Counterintelligence Community, the Counterintelligence Division portfolio includes the following missions & functions: Counterintelligence investigations and Preliminary Inquiries:</p> <p>The Counterintelligence Division conducts counterintelligence preliminary investigations to determine the initial facts and circumstances surrounding suspected clandestine relationships between MDA personnel and Foreign Intelligence Security Services agents or individuals associated with terrorist organizations. When allegations are substantiated, the Counterintelligence Division refers these matters to the appropriate Title 10, U.S.C. jurisdiction (Army, Navy or United States Air Force Counterintelligence Organization, Defense Criminal Investigative Services or Federal Bureau of Investigation, as appropriate.</p> <p>DoD Counterintelligence Collection and Reporting: The Counterintelligence Division systematically collects counterintelligence information from US and foreign counterpart intelligence, counterintelligence, security and law enforcement entities through routine liaison activities associated with multi-national BMD conferences overseas, RDT&E activities and BMDS deployments worldwide. The Counterintelligence Division also conducts briefings and debriefings of MDA personnel who travel outside continental United States (OCONUS) for counterintelligence relevant information. Information gleaned from these activities is reported to the US Intelligence Community via Intelligence Information Reports, as appropriate, to answer validated DoD Counterintelligence collection requirements.</p> <p>Counterintelligence Analysis and Production: The Counterintelligence Division conducts research and prepares timely and relevant analytic products that address the threat from espionage, international terrorism, subversion, sabotage, assassination, other clandestine or covert activities, and any other similar activities that are reasonably believed to have a foreign nexus. This includes threats to MDA personnel and property, RDT&E activities and conferences worldwide, and intelligence collection threats to MDA technology, information systems or infrastructure.</p> <p>Counterintelligence Functional Services: The Counterintelligence Division serves as the focal point within MDA for specialized counterintelligence technical services support to include Technical Surveillance Countermeasures surveys/inspections, Counterintelligence-Scope polygraph exams and computer forensic examinations in support of Counterintelligence and law enforcement investigations resulting from insider abuse or foreign computer intrusions. The Counterintelligence Division provides specialized support to MDA special access programs to protect the most critical BMDS technologies and capabilities from Foreign Intelligence and Security Service collection and exploitation throughout the entire acquisition lifecycle. The Counterintelligence Division develops and executes other defensive programs such as the insider threat program with the objective of detecting computer abuse or other nefarious activities detrimental to MDA interests.</p> <p>Counterintelligence Awareness, Briefing and Reporting Program: The Counterintelligence Division provides initial (MDA Newcomer's briefing) and periodic counterintelligence awareness training to the entire MDA Government and DoD Contractor workforce on the threats posed by Foreign Intelligence and Security Service,</p>		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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international terrorists, computer intruders, unauthorized disclosures and insider activities, and individual reporting responsibilities. In addition to counterintelligence awareness, the Counterintelligence Division provides mandatory foreign travel threat briefings to all MDA OCONUS travelers to familiarize them with potential terrorism, criminal, health, political and Foreign Intelligence and Security Service threats. Follow-up debriefings are done to capture pertinent counterintelligence information that is shared with other MDA travelers and the US Intelligence Community, as appropriate.

3. BMDS Security Assessment and Certification Division: This division is responsible for assisting the BMDS manage and deploy Information Assurance/Computer Network Defense solutions to enhance the robustness and resilience of the cyber infrastructure. To fulfill this role, the division works in concert with Information Assurance Engineers and Information Assurance Managers to obtain a comprehensive picture of the overall Information Assurance/Computer Network Defense architecture at all levels of the BMDS, then influence the design by 1) identifying opportunities to implement Defense-in-Depth within planned development cycles 2) providing oversight, coordination and management of key information assurance management processes, 3) by providing contract acquisition support to BMDS Elements ensuring information assurance is addressed throughout the procurement process and 4) by interfacing with the Intelligence Community to define cyber security threats relevant to the BMDS. To fulfill stated mission requirements, the division must interface with relevant information assurance domain experts to assess documentation and Information Assurance/Computer Network Defense design, gain insight into past/present security related issues, and exploit threat/vulnerability assessments to identify trends, understand threats and manage risks to fulfill certification related requirements.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Counterintelligence See Description Below <i>FY 2009 Accomplishments:</i> FY 2009 Accomplishments In FY 2009 and the Out years the Counterintelligence Division will continue down a transformational path to expand its capabilities to better support and protect MDA and BMDS personnel, facilities, information and activities from threats posed by Foreign Intelligence and Security Service, terrorism and criminal activities. The Counterintelligence Division will continue its federated approach to supporting MDA by leveraging available national and DoD Counterintelligence resources to ensure	4.131	4.167	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
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>counterintelligence products and services are fully integrated into all RDT&E programs and activities to protect critical program information and critical technologies. Specific plans include:</p> <p>The Counterintelligence Division will continue to foster collaborative partnerships and activities with the National and DoD Counterintelligence communities targeting Foreign Intelligence and Security Service collection activities directed against MDA personnel, facilities and activities to prevent the loss or compromise of critical program information or critical BMDs technologies.</p> <p>We will reinvigorate the Counterintelligence Division Collection, Analysis and Production Programs to better leverage available technology in support of MDA leadership and Program Managers.</p> <p>The Counterintelligence Division will prepare or update Counterintelligence Support Plans for all supported MDA Programs.</p> <p>The Counterintelligence Division will continue preparatory planning with European stakeholders and the Combatant Commands for providing on-site counterintelligence support to the European Interceptor Site and European Mid-course Radar Site construction projects tentatively slated to begin in FY 2010.</p> <p>The Counterintelligence Division will establish a Technical Surveillance Countermeasures Center at Redstone Arsenal, AL and achieve full operational capability by mid 2009; will request FY 2010 - FY 2015 Military Intelligence Program funding assistance to sustain Technical Surveillance Countermeasures program.</p> <p>Using external Foreign Counterintelligence Program funding, the Counterintelligence Division will expand the Combined Intelligence Fusion Center manpower and focus to include Cyber Counterintelligence which will seek to identify and neutralize potential insider threats.</p> <p>The Counterintelligence Division will procure and field upgraded secure data communications systems for its Huntsville Regional Office in support of flight tests, conferences and overseas deployments.</p> <p>The Counterintelligence Division will update Defense Threat Assessments and Multi-disciplined Counterintelligence Threat Assessments on MDA technologies and programs, as appropriate</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The Counterintelligence Division will partner with the Security and Program Protection Division to reinvigorate the MDA Research and Technology Program to better identify and protect critical program information and RDT&E activities.</p> <p><i>FY 2010 Plans:</i> FY 2010 Plans</p> <p>The Counterintelligence Division will continue to foster collaborative partnerships and activities with the National and DoD Counterintelligence communities targeting Foreign Intelligence and Security Service collection activities directed against MDA personnel, facilities and activities to prevent the loss or compromise of critical program information or critical BMDS technologies.</p> <p>The Counterintelligence Division will leverage available DoD counterintelligence resources to deploy Counterintelligence Officers to Poland and the Czech Republic to provide on-site support to the European Interceptor Site and European Mid-course Radar Site construction projects.</p> <p>Under a FY 2010 and out year Foreign Counterintelligence Program funding initiative, the Counterintelligence Division will establish a Flight Test Support Team dedicated to conducting defensive counterintelligence operations and technical support (Technical Surveillance Countermeasures and Cyber) to MDA RDT&E activities, flight tests and operational BMDS deployments worldwide.</p> <p>The Counterintelligence Division will procure and field updated secure data communications systems for the Colorado Springs Regional Counterintelligence Office in support of flight tests, conferences and overseas deployments.</p> <p>The Counterintelligence Division will solicit external Military Intelligence Program funding support to execute its Technical Surveillance Countermeasures program.</p> <p>Execute BRAC relocations according to MDA master plan with relocations to Redstone Arsenal, AL and Colorado Springs, CO.</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> The program plans for this project are reported under MD28 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Intelligence</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The Intelligence Requirements Office:</p> <p>Provides a single integrated mission area focus that interfaces with the Intelligence Community to acquire collection and analysis of data on foreign threat missiles. The increased pace of rogue nation missile development, i.e., Iran and North Korea, requires increasing intelligence collection, analysis, and production of data on foreign threat missiles. Additionally, the nature of the 21st century world-wide missile testing is reducing available signatures and warning of test events. Therefore, enhanced collaboration with the Intelligence Community is crucial to fielding a missile defense capability. Provides Intelligence Community data on foreign threat missiles to the BMDS System Engineer who uses the threats to develop and change the BMDS in support of BMDS architecture design, testing, modeling, and wargaming to reduce risk and improve system performance. Enables MDA program managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make informed decisions and invest limited resources on countering the most significant aspects of potential adversary capabilities. Gains access to and leverages unique, Intelligence Community developed, owned and operated capabilities for the benefit of the Missile Defense Community; many capabilities are highly classified</p>		13.096	11.321	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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>and require both access and expertise to exploit. Supports the overarching MDA objectives of BMDS on-Alert, continuing evolutionary development, and enhanced BMDS capabilities.</p> <p><i>FY 2010 Plans:</i> FY 2010 Plans</p> <p>The Intelligence Requirements Division will continue to be the single intelligence requirements integration office within MDA and its designated intermediary with the Intelligence Community and will continue to maintain a consistent dialog with the Intelligence Community to make sure they have a focused, prioritized, and a complete understanding of the vast requirements for foreign intelligence necessary to build a comprehensive BMDS. The increased pace of rogue nation missile development, i.e., Iran and North Korea, requires increasing intelligence collection, analysis, and production of data on foreign threat missiles. Additionally, the nature of the 21st century world-wide missile testing is reducing available signatures and warning of test events. Therefore, enhanced collaboration with the Intelligence Community is crucial to fielding a missile defense capability. ;</p> <p>Continue to manage the intelligence collection requirements and engage the Intelligence Community to ensure MDA requirements are documented, validated, collected, and understood. Intelligence tasks will include planning intelligence collections support for missile defense tests and documenting requirements in Intelligence Community management systems, maintaining and updating Measurement and Signature Intelligence (MASINT), Geospatial Intelligence (GEOINT), and Signal Intelligence (SIGINT) requirements on advances in foreign ballistic missile technology and for all MDA events. ;</p> <p>Continue to maintain an ongoing, persistent, focused dialog with all members of the Intelligence Community to ensure MDA intelligence requirements are viewed in proper context, receive the proper priority level, and are explicitly understood by the Intelligence Community. ;</p> <p>Continue to provide to all levels of builders of missile defense intelligence requirements with the most up-to-date and accurate intelligence which requires a detailed understanding of the BMDS developer's and senior leadership's particular requirements. ;</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue to provide an encyclopedic, all-source, and all encompassing knowledge base of the foreign ballistic missile threat including development, enhancement, and population of the Secret and Top Secret/Sensitive Compartmented Information Missile Threat Portal with Intelligence Community produced finish intelligence documents. These portals have the most up-to-date current intelligence to provide immediate situational awareness, technical intelligence data to be used by the BMDS Program Elements and System Engineers, and direct linkages to the Intelligence Community to support the MDA Warfighter Support Center. ;</p> <p>Maintain the use of UMPIRE which is a universal tool to allow BMDS planners and warfighters to access disparate Intelligence Community databases using a single interface.</p> <p><i>FY 2011 Base Plans:</i> The program plans for this project are reported under MD28 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>BMDS Security Assessment and Certification</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> BMDS Security Assessment and Certification Directorate: Execute the mission of the BMDS Information Assurance Functional Manager. Responsible for the following functions:</p> <p>Fulfilling the DoD 8500.2 and 8510.01 policy-mandated role as the BMDS Information Assurance Manager and the BMDS Information Assurance Officer for the overarching BMDS Mission System and Element Components.</p> <p>Characterizing the overall BMDS security posture; Manage matriced Information Assurance Manager staff.</p>	2.780	2.301	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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Defining the BMDS Information Assurance/Computer Network Defense architecture of the in conjunction with systems engineering.</p> <p>Defining Information Assurance requirements consistently, comprehensively and definitively at each stage of the acquisition lifecycle and in support of the European Component Office.</p> <p>Interfacing with the Intelligence Community to define cyber security threats relevant to the BMDS.</p> <p>Project Accomplishments/Plans: BMDS Information Assurance Directorate:</p> <p>Fulfill DoD 8500.2 and 8510.01 policy-mandated roles of the Information Assurance Manager and Information Assurance Officer for the overarching BMDS.</p> <p>Define information assurance requirements for Continental United States (CONUS) and non-CONUS based BMDS assets consistently, comprehensively and definitively.</p> <p>Assess the Information Assurance/Computer Network Defense security architecture to address gaps, to enhance interoperability, and realize efficiencies across all mission systems. Define the ``As Built`` and ``To Be`` Information Assurance architectures to support technical assessments and Information Assurance/Computer Network Defense design solutions and implementation recommendations.</p> <p>Provide information assurance advice and assistance to program managers and elements to support ongoing and planned implementation related activities for the fielded BMDS and for planned European and international implementations.</p> <p>Define Information Assurance/Computer Network Defense and cyber security infrastructure intelligence requirements to focus Intelligence Community collection, analysis and production to target MDA/BMDS vulnerabilities.</p> <p>Assist in the sustainment of an acceptable Information Assurance/Computer Network Defense security posture for the Director, MDA, through various initiatives at each stage of the program`s lifecycle.</p> <p><i>FY 2010 Plans:</i> FY 2010 Plans</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue to fulfill DoD 8500.2 and 8510.01 policy-mandated roles of the Information Assurance Manager and Information Assurance Officer for the overarching BMDS. ;</p> <p>Continue to define information assurance requirements for Continental United States (CONUS) and non-CONUS based BMDS assets consistently, comprehensively and definitively. ;</p> <p>Continue to enhance the Information Assurance posture of the BMDS by delivering expert, responsive, relevant Information Assurance/Computer Network Defense products and services supporting the PMs to meet BMDS and Element Information Assurance/Computer Network Defense needs and requirements. ;</p> <p>Continue to assist in the sustainment of an acceptable Information Assurance/Computer Network Defense security posture for the Director, MDA, through various initiatives at each stage of the program`s lifecycle.</p> <p><i>FY 2011 Base Plans:</i> The program plans for this project are reported under MD28 in PB11.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	20.007	17.789	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
	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

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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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 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>
• 0603882C: <i>Ballistic Missile Defense Mid-Course Segment</i>											
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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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 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>
• 0603906C: <i>REGARDING TRENCH</i>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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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

In support of acquiring an effective BMDS capability, this project directs various executing agents and leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the military departments, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS.

E. Performance Metrics

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Counterintelligence Analysis and Support-1 YX28	C/FFP	QinetiQ Inc Fairfax, VA	8.576	4.067	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Counterintelligence Analysis and Support-2 YX28	C/CPFF	Telecom Systems MD	0.220	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Counterintelligence Analysis and Support-3 YX28	TBD/TBD	Various Various	0.400	0.100	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Intelligence Support Center YX28	SS/CPAF	MDIOC-Northrop Grumman Colorado Springs, CO	5.996	2.844	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Intelligence Applications YX28	TBD/TBD	SMDC Hunstville, AL	1.933	1.191	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</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			
Intelligence Scenario Population YX28	SS/CPAF	MDIOC-Northrop Grumman Colorado Springs, CO	3.712	2.133	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Security Assessment and Certification IA/CND Support-1 YX28	TBD/TBD	Aerospace Corporation LA, CA and Columbia, MD	3.555	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Security Assessment and Certification Cyber threat Review and Assessment Support YX28	TBD/TBD	MITRE Bedford, MA	0.611	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Security Assessment and Certification IA/CND Support-2 YX28	SS/FFP	Booz Allen Hamilton McLean, VA	2.127	2.301	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Security Assessment and Certification IA/CND Support-3 YX28	SS/FFP	Zeltech Hampton, VA	0.270	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			27.400	12.636		0.000		0.000		0.000			

Remarks
MDIOC-Missile Defense Integration & Operations Center

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

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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			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Intelligence Project Management Support YX28	TBD/TBD	Aerospace Los Angeles, CA	1.060	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Project Management-1 YX28	C/FFP	BAH McLean, VA	10.476	5.153	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Project Management-2 YX28	C/FFP	SAIC San Diego, CA	1.101	0.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Project Management-3 YX28	C/FFP	ASR McLean, VA	0.707	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Project Management-4 YX28	SS/Various	Various Various	0.425	0.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Intelligence Project Management-5 YX28	TBD/TBD	CECOM Fort Monmouth, NJ	0.660	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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

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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			14.429	5.153		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	
Project Cost Totals	41.829	17.789		0.000		0.000		0.000				

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
CI Investigations & Operations Updates	■	■	■	■	■	■	■	■																				
Certification and Accreditation	■	■	■	■	■	■	■	■																				
Defense Threat Assessments	■	■	■	■	■	■	■	■																				
Intelligence Briefings	■	■	■	■	■	■	■	■																				
Intelligence Information Reports	■	■	■	■	■	■	■	■																				
Intelligence Support Center	■	■	■	■	■	■	■	■																				
Multi-Discipline CI Threat Assessment	■	■	■	■	■	■	■	■																				
Studies and Scenario Development	■	■	■	■	■	■	■	■																				
Systems Engineering & Validation	■	■	■	■	■	■	■	■																				
Travel Briefings & Debriefings	■	■	■	■	■	■	■	■																				
Update and Maintain Foreign Missile Knowledge Base	■	■	■	■	■	■	■	■																				
Wargaming Support	■	■	■	■	■	■	■	■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX28: <i>Intelligence & Security</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
CI Investigations & Operations Updates	1	2009	4	2010
Certification and Accreditation	1	2009	4	2010
Defense Threat Assessments	1	2009	4	2010
Intelligence Briefings	1	2009	4	2010
Intelligence Information Reports	1	2009	4	2010
Intelligence Support Center	1	2009	4	2010
Multi-Discipline CI Threat Assessment	1	2009	4	2010
Studies and Scenario Development	1	2009	4	2010
Systems Engineering & Validation	1	2009	4	2010
Travel Briefings & Debriefings	1	2009	4	2010
Update and Maintain Foreign Missile Knowledge Base	1	2009	4	2010
Wargaming Support	1	2009	4	2010

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</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
MD28: <i>Intelligence & Security</i>	0.000	0.000	15.905	0.000	15.905	15.711	15.992	16.276	16.360	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

Note: In accordance with the Missile Defense Agency revised Budget structure, the content previously planned in Project YX28 for FY 2009 - FY 2010 is now captured in Project MD28 for FY 2011 - FY 2015.

A. Mission Description and Budget Item Justification

Intelligence and Security Program Major Program Goals:

Ensure the Intelligence Community understands, accurately and timely fulfills MDA`s current and future prioritized intelligence requirements; advocate BMDS test support collection requirements with the Intelligence Community and ensure that MDA`s intelligence needs and finished intelligence requirements are understood while ensuring the Intelligence Community is involved in technical interchange meetings.

Continue the federated approach to supporting MDA by leveraging available National and DoD Counterintelligence resources to ensure counterintelligence products and services are fully integrated into all RDT&E programs and activities to protect classified information, critical technologies and to support and protect MDA and BMDS personnel, facilities, information and activities from criminal, terrorist and Foreign Intelligence and Security Service targeting/threats.

Consistently, comprehensively and definitively define information assurance requirements for Continental United States (CONUS) and non-CONUS based on BMDS assets. Define Information Assurance/Computer Network Defense and cyber security infrastructure intelligence requirements to focus Intelligence Community collection, analysis and production to target MDA/BMDS vulnerabilities; definitize and incorporate information assurance requirements into the systems engineering process.

The Security and Intelligence Project captures three specific areas:

- 1) Intelligence
- 2) Counterintelligence
- 3) BMDS Information Assurance Development and Management

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</i>
<p>Collectively, these efforts provide critical information regarding threat ballistic missile system capabilities (via intelligence), protection of personnel, activities, and technology from espionage and terrorism through active and passive activities (via counterintelligence); and BMDS system vulnerabilities (via BMDS information assurance). Specifically, the activities include overarching MDA objectives of BMDS on-Alert, continuing evolutionary development, and enhanced BMDS capabilities.</p> <p>1) Intelligence: The MDA Intelligence Requirements Division serves as a clearing house for MDA`s requirements for the Intelligence Community collection, analysis and production. The MDA Intelligence Requirements Division serves as the quality control and dissemination agent of Intelligence Community products for all properly cleared Government and contractor personnel and provides feedback to the Intelligence Community on subsequent questions, issues and other requirements resulting from Intelligence Community reporting. The intelligence process begins when the Intelligence Community collects and analyzes data on foreign threat missiles. Resulting threats and threat changes are provided to the BMDS System Engineer who uses the threats to develop and change the BMDS. Through this activity, threat data is provided to support BMDS architecture design, and testing. This information reduces the risk and improves system performance. It enables MDA Program Managers to achieve a sufficiently accurate understanding of the threat environment to respond to relevant capabilities of immediate importance, make informed decisions and invest limited resources on countering the most significant aspects of potential adversary capabilities. Other aspects of the Intelligence Division are designed to gain access to, and leverage unique Intelligence Community developed, owned and operated capabilities for the benefit and advocacy of the Missile Defense Community. Numerous Intelligence Community capabilities are highly classified and require both access and expertise to exploit. The Intelligence Requirements Division supports the overarching MDA objectives of BMDS on-Alert, evolutionary development, and enhanced BMDS capabilities.</p> <p>2) Counterintelligence: Pursuant to Executive Order 12333, (US Intelligence Activities), DoD Directive 5240.2 (DoD Counterintelligence), and other DoD Counterintelligence policy issuances, the MDA Counterintelligence Division is charged with undertaking activities as part of an integrated DoD and national effort, to detect, identify, assess, exploit, degrade and counter or neutralize foreign intelligence collection efforts, sabotage, espionage, sedition, subversion, terrorist and other intelligence activities directed against MDA personnel, information, materials, facilities, and activities or against U.S. national security. As a member of the DoD Counterintelligence Community, the Counterintelligence Division`s portfolio includes the following missions and functions:</p> <p>Counterintelligence Investigative Inquiries: Pursuant to DoD Instruction 5240.21, the Counterintelligence Division conducts counterintelligence investigative inquiries into reported or suspected clandestine relationships between MDA personnel and agents of a foreign power and/or individuals associated with international terrorist organizations; failure to report contact with a foreign intelligence service and/or failure to comply with DoD reporting requirements pursuant to DoD Instruction 5240.6. Counterintelligence inquiries establish or refute a reasonable belief that a particular person was acting for or on behalf of, or an event was related to, a foreign power engaged in spying or committing espionage, sabotage, treason, sedition, subversion, assassinations, or international terrorist activities. When such allegations are substantiated, the Counterintelligence Division refers them to the appropriate Title 10, U.S. Code jurisdiction (Army, Navy or United States Air Force Counterintelligence Organization, Defense Criminal Investigative Services or Federal Bureau of Investigation, as appropriate) for further investigative action.</p> <p>Counterintelligence Collection and Reporting: Pursuant to DoD Instruction 5240.17, the Counterintelligence Division systematically collects counterintelligence information from US and foreign counterpart intelligence, counterintelligence, security and law enforcement entities through routine liaison and other activities associated with multi-national BMD conferences overseas, RDT&E activities and BMDS deployments worldwide. The Counterintelligence Division also conducts</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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<p>briefings and debriefings of MDA personnel who travel overseas and passes on any relevant information to the US Intelligence Community via Intelligence Information Reports, as appropriate, to answer validated DoD Counterintelligence collection requirements.</p> <p>Counterintelligence Analysis and Production: Pursuant to DoD Instruction S-5240.18, the Counterintelligence Division conducts unclassified and classified web-based research and prepares tailored, timely and relevant analytical products that address threats from espionage, international terrorism, subversion, sabotage, assassination, other clandestine or covert activities, and any other similar activities targeting MDA that are reasonably believed to have a foreign nexus. This includes threats to MDA personnel, property, flight tests, RDT&E activities, and worldwide conferences in addition to intelligence collection threats to MDA critical program information, BMDS technologies, administrative and mission networks or infrastructure.</p> <p>Counterintelligence Functional Services: Pursuant to DoD Instruction 5240.16, the Counterintelligence Division conducts specialized defensive Counterintelligence activities to identify and counter terrorism, espionage, sabotage and other related activities of foreign intelligence services in support of MDA flight tests, Special Access Programs, CONUS/OCONUS BMD conferences, BMDS field deployments and initiatives and other worldwide initiatives. Specialized defensive counterintelligence activities include the conduct of Technical Surveillance Countermeasures surveys/inspections (DoD Instruction 5240.5) and computer forensics examinations in support of investigations resulting from reported insider threats and/or foreign computer intrusions.</p> <p>Counterintelligence Awareness, Briefing and Reporting Program: Pursuant to DoD Instruction 5240.6, the Counterintelligence Division provides initial (MDA Newcomer`s briefing) and periodic Counterintelligence Awareness briefings to DoD military, civilian and contractor personnel assigned to MDA. These briefings focus on the threats posed by foreign intelligence services, international terrorists, computer intruders and unauthorized disclosures, in addition to individual reporting responsibilities. The Counterintelligence Division also provides mandatory foreign travel threat briefings to all MDA OCONUS travelers to familiarize them with potential terrorism, criminal, health, political and foreign intelligence and security service threats they may encounter. Follow-up debriefings are conducted to capture pertinent counterintelligence information that is shared with other MDA travelers and the US Intelligence Community, as appropriate.</p> <p>Counterintelligence in Cyberspace: Pursuant to DoD Instruction 5240.LL and other DoD policy guidance, the Counterintelligence Division conducts defensive cyber activities and computer forensics using specialized gear and software toolsets to detect, identify, assess, deter, neutralize or exploit the activities of individuals, organizations, international terrorists and foreign intelligence and security services attempting to extricate information from MDA administrative or mission networks or using the MDA cyberspace domain to conduct espionage, other intelligence activities, sabotage, and assassinations against MDA personnel, facilities, programs and/or activities.</p> <p>3) BMDS Information Assurance Division: This division is responsible for assisting the BMDS to manage and deploy Information Assurance/Computer Network Defense requirements and solutions to fulfill DoD and Warfighter mandates, while enhancing the robustness and resilience of the cyber infrastructure. To fulfill this role, the BMDS Information Assurance Division works in concert with Information Assurance Engineers and Information Assurance managers to obtain a comprehensive picture of the overall Information Assurance/Computer Network Defense architecture at all levels of the BMDS, then influence the design by 1) identifying and developing Core Standards and Requirements to implement Defense-in-Depth within planned development cycles (Builds); 2) providing oversight, coordination and management of key information assurance management processes, technical requirements development, and policy-mandated responsibilities; 3) providing contract acquisition support to BMDS Elements ensuring information assurance is addressed throughout the procurement process, and; 4) interfacing with the Intelligence Community to define cyber security threats relevant to the BMDS. To fulfill stated mission requirements, the division must interface with relevant information assurance experts to assess</p>		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</i>
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requirements, documentation and Information Assurance/Computer Network Defense design, gain insight into past/present/future security related issues, and exploit threat/vulnerability assessments to identify trends, understand threats and manage risks to fulfill developmental related requirements.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>BMDS Information Assurance</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Plans BMDS Information Assurance Division : ; Execute the mission of the BMDS Information Assurance Functional Manager. ; Responsible for the following functions: ;</p> <p>Fulfilling the DoD 8500.2 and 8510.01 policy-mandated role as the BMDS Information Assurance Manager and the BMDS Information Assurance Officer for the overarching BMDS Mission System and Element Components. Characterizing the overall BMDS security posture; Manage matriced Information Assurance Manager staff. ; Defining the BMDS Information Assurance/Computer Network Defense architecture of the in conjunction with systems engineering. ; ; Defining Information Assurance requirements consistently, comprehensively and definitively at each stage of the acquisition lifecycle and in support of the European Component Office. Interfacing with the Intelligence Community to define cyber security threats relevant to the BMDS.</p>	0.000	0.000	2.688	0.000	2.688

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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 program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Counterintelligence Planned Program:</p> <p>The Counterintelligence Division will continue to serve as the single point of contact with Federal, State and Local Law Enforcement and Counterintelligence Organizations. ; To this end, the Counterintelligence Division will continue to foster collaborative partnerships targeting foreign intelligence collection activities directed against MDA personnel, facilities and activities to prevent the loss or compromise of critical program information or critical BMDS technologies.</p> <p>The Counterintelligence Division will deploy organic counterintelligence teams to conduct defensive counterintelligence activities in support of MDA fielding initiatives worldwide to include sites in Poland and the Czech Republic.</p> <p>The Counterintelligence Division will procure and field updated secure data communications systems for the Colorado Springs Regional Counterintelligence Office in support of flight tests, conferences and overseas deployments.</p> <p>The Counterintelligence Division will continue to support all MDA flight tests to detect, deter, or neutralize criminal, terrorist and foreign intelligence collection threats targeting MDA and BMDS technologies, personnel, facilities and activities.</p> <p>The Counterintelligence Division will continue to keep MDA leadership and supported Program Elements informed of counterintelligence threats targeting its Research, Development and Acquisition programs, technologies and critical program information through aggressive an Analysis and Production Program.</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>		PROJECT MD28: <i>Intelligence & Security</i>				
B. Accomplishments/Planned Program (\$ in Millions)								
				FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The Counterintelligence Division will continue to educate the entire MDA workforce on the criminal, terrorist and foreign intelligence threats targeting MDA personnel, information, facilities and activities through an aggressive Counterintelligence Awareness Briefing Program that includes foreign travel threat briefings.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>								
<p>Intelligence</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under YX28 in PB10.</p> <p><i>FY 2011 Base Plans:</i> FY 2011 Intelligence Planned Program:</p> <p>The Intelligence Requirements Office will continue to be the single intelligence requirements integration office within MDA and its designated intermediary with the Intelligence Community and will continue to maintain a consistent dialog with the Intelligence Community to make sure they have a focused, prioritized, and a complete understanding of the vast requirements for foreign intelligence necessary to build a comprehensive BMDS. Continue to manage the intelligence collection requirements and engage the Intelligence Community to ensure MDA requirements are documented, validated, collected, and understood. Intelligence</p>				0.000	0.000	8.855	0.000	8.855

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

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>tasks will include planning intelligence collections support for missile defense tests and documenting requirements in Intelligence Community management systems, maintaining and updating Measurement and Signature Intelligence (MASINT), Geospatial Intelligence (GEOINT), and Signal Intelligence (SIGINT) requirements on advances in foreign ballistic missile technology and for all MDA events.</p> <p>Continue to maintain an ongoing, persistent, focused dialog with all members of the Intelligence Community to ensure MDA intelligence requirements are viewed in proper context, receive the proper priority level, and are explicitly understood by the Intelligence Community.</p> <p>Continue to provide to all levels of builders of missile defense intelligence requirements with the most up to-date and accurate intelligence which requires a detailed understanding of the BMDS developer`s and senior leadership`s particular requirements.</p> <p>Continue to provide an encyclopedic, all-source, and all encompassing knowledge base of the foreign ballistic missile threat including development, enhancement, and population of the Secret and Top Secret/Sensitive Compartmented Information Missile Threat Portals with Intelligence Community produced finish intelligence documents. These portals have the most up-to-date current intelligence to provide immediate situational awareness, technical intelligence data to be used by the BMDS Program Elements and System Engineers, and direct linkages to the Intelligence Community to support the MDA Warfighter Support Center.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	15.905	0.000	15.905

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

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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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>											
• 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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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</i>
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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

In support of acquiring an effective BMDS capability, this project directs various executing agents and leverages expertise in the intelligence community, counterintelligence community, and information assurance community, including the military departments, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and industry. The executing agents utilize various contracting strategies in a flexible manner to maximize their contribution to the BMDS. Products and Services will be acquired by competitive means to the extent that is possible and practical.

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 approach to support the 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. Advisory and Assistance Services 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

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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
BMDs Information Assurance IA/CND Support MD28	SS/FFP	Booz Allen Hamilton McLean, VA	0.000	0.000		2.688		0.000		2.688	Continuing	Continuing	Continuing
Counterintelligence Analysis and Support MD28	C/FFP	QinetiQ Inc Fairfax, VA	0.000	0.000		4.262	Jan 2011	0.000		4.262	Continuing	Continuing	Continuing
Counterintelligence Analysis and Support - 2 MD28	TBD/TBD	Various Various	0.000	0.000		0.100	Jan 2011	0.000		0.100	Continuing	Continuing	Continuing
Intelligence Intelligence Watch MD28	SS/CPAF	MDIOC-Northrop Grumman Colorado Springs, CO	0.000	0.000		2.346	Jan 2011	0.000		2.346	Continuing	Continuing	Continuing
Intelligence Analysis and Support MD28	C/FFP	Booz Allen Hamilton	0.000	0.000		5.294	Jan 2011	0.000		5.294	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</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			
		McLean VA											
Intelligence Applications MD28	TBD/TBD	SMDC Huntsville, AL	0.000	0.000		1.191	Jan 2011	0.000		1.191	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		15.881		0.000		15.881			

Remarks
MDIOC - Missile Defense Integration & Operations Center

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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD28: <i>Intelligence & Security</i>
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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			
Intelligence Project Management MD28	SS/Various	Various Various	0.000	0.000		0.024	Jan 2011	0.000		0.024	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.024		0.000		0.024			

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
Project Cost Totals	0.000	0.000		15.905		0.000		15.905			

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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>				PROJECT YX29: <i>Producibility and Manufacturing Technology</i>				
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
YX29: <i>Producibility and Manufacturing Technology</i>	40.805	44.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	84.837
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

The content previously planned in Project YX29 for FY 2009 - FY 2010 is now captured in Project MD29 for FY 2011 - FY 2015.

A. Mission Description and Budget Item Justification

Producibility and Manufacturing's responsibility is improving the Ballistic Missile Defense System by applying producibility tools; which include Design for Manufacturing and Assembly, supply chain gap analysis, and Continuous Process Improvement (CPI) which includes Lean Six-Sigma, the Theory of Constraints, and others to assist in the elimination of manufacturing waste, reducing process variability, and insuring first time quality for Ballistic Missile Defense Element Program Offices and their suppliers.

The identification of manufacturing risks is done through Engineering and Manufacturing Readiness Level (EMRL) Assessments. EMRLs are a systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes as a factor in the BMDS Risk Management Process. Producibility and Manufacturing conducts Industrial Capability Assessments (ICAs) across the BMDS Industrial Base in order to identify production gaps created by material supplier changes, loss of manufacturing base, and movement of US production overseas. From these assessments, a gap analysis is developed which focuses on methods that can be used to support our US original equipment manufacturers (OEMs), their supplier base, and other organizations that produce end items for the BMDS.

As part of the gap analysis US environmental concerns are addressed. Our efforts to find a replacement for the environmentally toxic metal Beryllium has focused us on an environmentally friendly Silicon Carbide as a Kill Vehicle telescope construction material. An additional benefit of Silicon Carbide is the telescope assembly also improves the nuclear survivability of or Kill Vehicle sensors.

Producibility and Manufacturing is MDA's Technology Transition Lead; ensuring technologies and products under development from the Advanced Technology Deputate, items developed through the Small Business Innovative Research program, and efforts developed through the Services MANTECH programs are mapped into the BMDS architecture at the appropriate insertion points and in concert with the Elements. We assess and report transition readiness using Engineering Manufacturing Readiness Levels and exit criteria metrics (i.e., Critical Knowledge Points).

Near term producibility capabilities are accomplished through efforts in a number of key investment areas: Power Systems, Radiation Hardening/ Survivability (both natural and prompt radiation affects), Manufacturing Process Improvements, Electro-Optics/Infrared (EO/IR), Radar RF / Electronics, Propulsion, Advanced Materials and Structures, and Anti-Tamper. These capabilities are matured through the Next Generation Component Producibility Program and its associated Flight Experiments.

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

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These efforts are programmed for BMDS Element integration within a three to five year timeframe. MDA has designated Producibility and Manufacturing as the command focal point for Continuous Process Improvement (CPI) which includes the utilization of tools such as Lean Six-Sigma, and the Theory of Constraints to assist in the elimination of waste, reducing process variability, and insuring first time quality for internal and external customers.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Power Systems See Description Below <i>FY 2009 Accomplishments:</i> Developed new manufacturing process for precursor material for Li-ion battery cells. This process will be used in the DoD Title III program and will save the program several million dollars since they will not need to use a more expensive process. THAAD Kill Vehicle batteries successfully qualified at Eagle Picher in May 2009. The KVB uses a low temperature electrolyte developed under the DEP effort and allows battery operation over full system temperature range. Completed Lean Six Sigma effort at Eagle Picher's energetics facility. Results allowed Eagle Picher to realize improvements in cycle time and quality while reducing costs. <i>FY 2010 Plans:</i> Continue Lean Six Sigma Projects, Value Stream Mappings and Rapid Improvement Events in selected Eagle Picher Technologies Product areas, both Energetics and Battery Fully implement Computer Assisted Production Planning/Paperless Manufacturing Review factory integrated improvements which impact MDA product cycle time, quality, and cost Relocate Eagle Picher Technologies Company oxyhalide battery production based on manufacturing improvements developed in the FY 2009 Lean Six Sigma Projects <i>FY 2011 Base Plans:</i> NA	5.083	4.387	0.000	0.000	0.000

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<i>FY 2011 OCO Plans:</i> NA						
Radiation Hardening See Description Below <i>FY 2009 Accomplishments:</i> Promulgated Position, Navigation and Timing, MDA-STD-004, core standard in support of Common Inertial Measurement Unit (CIMU), MDA-STD-005. Engaged radiation hardness assurance (RHA) under the Parts, Materials and Processes (PMAP) Mission Assurance Plan, MDA-QS-003-PMAP-REV A, as a CIMU compatibility targeted for Ground-based Midcourse Defense two stage booster applications. Conducted High Altitude Exo-Atmospheric Nuclear Survivability (HAENS), MDA-STD-001A, testing for nearly half of electronic devices used in CIMU including accelerometers, data bus and optical components. <i>FY 2010 Plans:</i> Conduct electronics and sensor nuclear survivability testable protocol testing for the BMDS. This includes sensor chip assembly testing of Kill Vehicle long wave infrared and visible sensors relative to MDA-STD-001. Use the High Altitude Exoatmospheric Nuclear Survivability standard tested parts from FY 2008 and FY 2009 for building prototype Inertial Measurement Unit engineering development units that meet MDA-STD-005. This will lead to low rate initial production of a Nuclear Survivable common Inertial Measurement Unit. <i>FY 2011 Base Plans:</i> NA		3.800	6.405	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
<i>FY 2011 OCO Plans:</i> NA						
<p>Manufacturing Process Improvements See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Deployed Mission Assurance supply chain Mapping Interface (MIAMI) pilot at Raytheon Missile Systems (RMS). ; Quickly identified specific suppliers potentially affected by hurricanes, fires, flooding, earthquakes ; RMS was so satisfied ; they are ; moving to deploy ; technology throughout entire Raytheon corporation. ; Demonstrated a Vet-Biz Initiative for National Sustainment (VINS)/Supplier Qualification Project at LMMFC. ; Developed web-crawling technology to identify potentially qualified suppliers with certain skill sets. ; This supply chain tool will identify new sources of Veteran Owned Small Business (VOSB) ; and Service Disabled Veteran Owned Small Business (SDVOSB) suppliers with capabilities in key technology fields. Established MDA Obsolescence Working Group that will support the MDA Parts, Materials, and Processes board. ; Major focus is on lead free electronics and counterfeit parts. ; Updated MDA Obsolescence Desk Guide and completed Lean Six Sigma activities with PAC-3 suppliers.</p> <p><i>FY 2010 Plans:</i> Conduct Continuous Process Improvement efforts for internal and external MDA customers. This includes the following:</p> <p>Lean Six Sigma Green Belt and Black Belt Training and certification Lean Six Sigma Green Belt and Black Belt Project Planning, Mentoring and Implementation Target projects that help MDA meet its strategic, short term and long term objectives Web-based Lean Six Sigma Champion Training Development</p>		2.843	3.837	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>Complete Lean Six Sigma -Pathways Training for Suppliers to One Original Equipment Manufacturers (Second Wave) and initiate Lean Six Sigma -Pathways Training with a new MDA Original Equipment Manufacturer and it's Suppliers</p> <p>Participate with OSD Continuous Process Improvement Steering Group in improving the Continuous Process Improvement program based on lessons learned and Lean Six Sigma technology developments</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Electro-Optics/Infrared (EO/IR)</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Collaborated with LLNL to use NIF laser-based radiation source for radiation and thermal shock testing of improved thermal figure of merit missile interceptor optical telescope materials Collaborated with IR focal plane array (FPA) suppliers and AFRL Kirtland to develop and test an Operational Operability Metric to leverage capabilities afforded by new digital FPAs to improve production yields and enable larger format arrays Collaborated with IR FPA suppliers to establish the benefits of hydrogen infiltration or hydrogenization of IR FPA detectors to reduce defect densities and improve detector material quality to include growth of Mercury-Cadmium-Telluride on alternative substrates Identified extreme environment MEMS-based IMU suppliers for smaller, more accurate and radiation tolerant interceptor IMUs</p>		12.029	18.738	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 2010 Plans:</i> Complete coordinated multiple low (3-5 units) quantity production and radiation testing of both improved performance and radiation tolerant next generation sensor subsystems/component technologies for flight experiments planned for FY10 involving two sensor guided by a controlled divert and attitude control system. The planned sensor technologies are : 1) both one and two color digital (up to 200 frames/sec) Focal Plan Arrays, 2) a common power and data bus architecture/connectors, and a (missile and space) standard power and data bus architecture/connectors and common dual-use split-cryocooler configuration, 3) subwavelength gratings in lieu of coatings to improve the efficiency of both transmissive and reflective optics, and 4) laser cross-link telemetry between two separately launched payloads (sensor with Divert and Attitude Control System).</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Radar RF/Electronics See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Conducted reliability testing of next generation High Voltage Gallium Arsenide X-band monolithic microwave integrated circuits and achieved >10⁶ hours reliability at required power levels and efficiency. ; Conducted reliability testing of Gallium Nitride X-band discrete devices. Achieved >10⁶ hours reliability on GaN devices as supplied from 2 domestic sources at required power levels and efficiency. ;</p>		2.658	2.950	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>Continued the 4-inch Diameter Semi-insulating Silicon Carbide Wafer Producibility program. ; Introduced second source for 4-inch Semi-insulating Silicon Carbide wafers for utilization by MDA and other DoD radar programs. ; Demonstrated wafer producibility metrics as well as independent review by Industry.</p> <p>Initiated the 4-inch Diameter Semi-insulating Gallium Wafer Producibility program. Demonstrated scale-up of wafer size from 1-inch diameter to 2-inch diameter.</p> <p><i>FY 2010 Plans:</i></p> <p>Continue the High Power Electronics Reliability Test program for MDA and other joint DoD applications.</p> <p>Conduct reliability testing of Gallium Nitride X-band monolithic microwave integrated circuits. This testing will focus on 1st generation (28V) Gallium Arsenide monolithic microwave integrated circuits</p> <p>Initiate the X-band Gallium Arsenide monolithic microwave integrated circuits Producibility program to support MDA and other joint DoD applications. This is to focus on 1st generation (28V) Gallium Arsenide monolithic microwave integrated circuits</p> <p>Initiate development of a Radar Demonstrator to aid in the transition of producible, modular, scalable, and affordable technology to the BMDS.</p> <p><i>FY 2011 Base Plans:</i></p> <p>NA</p> <p><i>FY 2011 OCO Plans:</i></p> <p>NA</p>						
Propulsion See Description Below		8.481	2.287	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> Completed preliminary design review for the low cost liquid DACS program. ; The PDR was completed successfully with the design approach disclosed, all risks identified and mitigation plans in place. Kicked off throttling DACS development to support the flight experiment program. ; Conducted the first concept design reviews for the divert subsystem and the integrated actuator subsystem for the divert thrusters. Completed initial material evaluation for the Lyocell staple fiber material. ; This material evaluation program is assessing the maturity and viability of Lyocell as a replacement material for rocket motor ablative components currently manufactured with NARC Rayon.</p> <p><i>FY 2010 Plans:</i> Execute component and subsystem design, fabrication and testing of controllable Solid Divert and Altitude Control System component technologies. This program will be a testbed for products developed as part of the overall materials development program, low cost high performance actuators and other control schemes as they relate to improved performance for controllable solid DACS systems for the BMDS</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Advanced Materials & Structures See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Delivered composite lightweight solid rocket motor case</p>		3.066	2.337	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>Delivered Multiple Kill Vehicle payload adapter Developed and tested a Low Shock Stage Separation System for FE-2 and SM-3 BKIIA. Developed new Compact Antenna design for SM-3 BK IIA Continued to materially characterize Lyocell to determine suitability as replacement for aerospace grade carbon rayon fiber.</p> <p><i>FY 2010 Plans:</i> Will deliver LM electronic control unit housing Will deliver pressure vessel ;fuel tank</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Anti-Tamper See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Demonstrated feasibility of novel software modification effort to improve key management and authentication of processors. Performed reverse engineering assessments to assess effectiveness on SBIR developed technologies. Identified BMDS critical technologies and implemented Anti-Tamper (AT) ;solutions.</p>	2.845	3.091	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 2010 Plans:</i> Evaluate software modification effort started in FY08 to determine its likely effectiveness against reverse engineering. Develop protective Anti-Tamper technologies focused on key management, authentication, and active response (penalties) for the BMDS. Develop low/no power AT technologies to enable active response capabilities for the BMDS. Evaluate performance of multiple integrated AT technologies. Conduct assessments on Anti-Tamper technologies to evaluate likely effectiveness. Initiate transition plans and tailor above Anti-Tamper technologies for utilization on and protection of the BMD System. Work with the BMDS to identify critical technologies and identify Anti-Tamper solutions.</p> <p><i>FY 2011 Base Plans:</i> NA</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	40.805	44.032	0.000	0.000	0.000

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
• 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

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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	3.159	6.130	7.529	0.000	7.529	8.295	8.286	8.479	8.675	0	50.553

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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 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>
• 0603906C: <i>REGARDING TRENCH</i>											
• 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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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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

Producibility and Manufacturing adheres to MDA`s capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The Producibility and Manufacturing group is MDA`s Technology Transition Lead; ensuring technologies and products under development from the Advanced Technology Deputate, items developed through the Small Business Innovative Research program, and efforts developed through the Services MANTECH programs are mapped into the BMDS architecture at the appropriate insertion points and in concert with the BMDS Elements. The identification of manufacturing risks is done through Engineering and Manufacturing Readiness Level (EMRL) Assessments. EMRLs are a systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes as a factor in the BMDS Risk Management Process. Producibility and Manufacturing conducts Industrial Capability Assessments (ICAs) across the BMDS Industrial Base in order to identify production gaps created by material supplier changes, loss of manufacturing base, and movement of US production overseas. From these assessments, a gap analysis is developed which focuses on methods that can be used to support our US original equipment manufacturers (OEMs), their supplier base, and other organizations that produce end items for the BMDS. As part of the gap analysis, US environmental concerns are addressed. Our efforts to find a replacement for the environmentally toxic metal Beryllium has focused our efforts on pursuing environmentally friendly Silicon Carbide as a Kill Vehicle telescope construction material. An additional benefit of Silicon Carbide is that it will be used to improve the nuclear survivability of Kill Vehicle sensors which is part of the telescope assembly. For efficiency, Producibility and Manufacturing utilizes existing MDA and service contract vehicles when possible to execute the program.

E. Performance Metrics

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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			
Power Systems Battery Efforts YX29	TBD/TBD	NSWC/Crane, IN -	4.222	0.836	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Power Systems Li-Ion Modeling YX29	TBD/FFP	Quallion -	0.575	0.575	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Power Systems Lean Initiatives YX29	TBD/FFP	Tiburon -	0.530	0.530	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Power Systems BLDS Program Battery YX29	Various/ Various	Various Various	1.459	1.459	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Power Systems Thermal Battery Process Improvements YX29	TBD/FFP	Enser -	0.200	0.200	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening Rad Hard-1 YX29	TBD/CPFF	Draper -	0.022	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening Rad Hard-2 YX29	TBD/CPFF	Kearfott -	5.429	5.503	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements BMDS Supply Chain YX29	TBD/CPFF	ATI -	1.611	1.275	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements CPI YX29	TBD/CPFF	DRC -	1.170	1.275	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements COTS YX29	TBD/TBD	Crane -	0.465	0.330	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-1 YX29	TBD/CPFF	BAE Kirtland, NM	1.900	0.300	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	TBD/CPFF	Fibertek	2.095	1.000	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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			
Electro-Optics/Infrared (EO/IR) EO/IR-2 YX29		Hendon, VA											
Electro-Optics/Infrared (EO/IR) EO/IR-3 YX29	TBD/CPFF	Miltec -	3.300	1.100	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-4 YX29	TBD/TBD	DMEA McLellan, CA	1.200	1.000	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-5 YX29	TBD/TBD	NASA Wallops Island	5.050	2.400	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-6 YX29	TBD/CPFF	AXSYS -	3.803	1.800	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-7 YX29	TBD/CPFF	EOC PA	1.000	10.151	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR-8 YX29	TBD/CPFF	Draper -	0.200	0.200	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics Bulk Si GaN for RF YX29	TBD/CPFF	AFRL Kirtland	0.895	0.500		0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics Reliability Testing YX29	TBD/TBD	NRL Washington, DC	0.400	0.300		0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics Tri-Service Rel. Testing YX29	TBD/TBD	AFRL Kirtland	1.042	0.613		0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics Producibility of 100mm Si SiC Substrates YX29	TBD/TBD	AFRL Kirtland	1.200	0.750		0.000		0.000		0.000	Continuing	Continuing	Continuing
Propulsion SMDC YX29	TBD/CPFF	Aerojet	10.650	0.600	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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			
		Sacramento, CA											
Propulsion Propulsion-1 YX29	TBD/TBD	NSWCCD MD	1.496	0.730	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Propulsion Propulsion-2 YX29	TBD/TBD	China Lake CA	0.101	0.055	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Advanced Materials & Structures Advanced Materials-1 YX29	TBD/CPFF	SMDC/San Diego Composites San Diego, CA	3.557	1.385	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Advanced Materials & Structures Advanced Materials-2 YX29	TBD/TBD	SORI -	0.458	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Advanced Materials & Structures Advanced Materials-3 YX29	TBD/TBD	DCMA IAC	0.060	0.035	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Anti-Tamper Anti-Tamper YX29	TBD/TBD	NSWC Crane Crane, IN	0.766	0.304	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Anti-Tamper Technology Development/ Assessment YX29	Various/ Various	AFRL Raytheon	1.891	2.000	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			56.747	37.206		0.000		0.000		0.000			

Remarks

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</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			
Power Systems SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening Other DoD YX29	TBD/TBD	SMDC Huntsville, AL	0.228	0.115	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements JDMTP YX29	TBD/CPFF	Tiburon -	0.318	0.170	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements Tin Whisker/PCB Tech YX29	TBD/TBD	ONR VA	0.318	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Propulsion SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Propulsion Other DoD YX29	TBD/TBD	SMDC Huntsville, AL	0.228	0.115	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Advanced Materials & Structures SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</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			
Advanced Materials & Structures Other DoD YX29	TBD/TBD	SMDC Huntsville, AL	0.224	0.130	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Anti-Tamper SETA YX29	TBD/FFP	DRC, Sparta VA	1.006	0.525	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			9.364	4.730		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>				PROJECT YX29: <i>Producibility and Manufacturing Technology</i>					

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			
Power Systems Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Power Systems CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radiation Hardening CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Manufacturing Process Improvements CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Radar RF/Electronics CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Propulsion Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	TBD/TBD	MDA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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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			
Propulsion CIV Travel YX29		VA											
Advanced Materials & Structures Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Advanced Materials & Structures CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Anti-Tamper Govt Personnel YX29	TBD/TBD	MDA VA	0.420	0.225	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Anti-Tamper CIV Travel YX29	TBD/TBD	MDA VA	0.072	0.037	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			3.936	2.096		0.000		0.000		0.000			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.047	44.032	0.000	0.000	0.000			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Li-Ion Battery Mgnt System Line				■	■																							
Dual-use Cryocooler Testing	■																											
Optical Mat'ls (Subst./Coatings) Radiation Testing	■																											
Advanced IR Detector with Digital Readout Testing						■	■	■	■																			
4-inch Diameter GaN Wafer Producibility-1Q2009	■																											
4-inch Diameter GaN Wafer Producibility-1Q2010						■																						
4-inch Diameter GaN Wafer Producibility-2Q2009		■																										
4-inch Diameter GaN Wafer Producibility-2Q2010							■																					
4-inch Diameter GaN Wafer Producibility-3Q2009			■																									
4-inch Diameter GaN Wafer Producibility-3Q2010								■																				
4-inch Diameter GaN Wafer Producibility-4Q2009				■																								
4-inch Diameter GaN Wafer Producibility-4Q2010											■																	
	■																											

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
4-inch Diameter SiC Water Producibility-1Q2009																												
4-inch Diameter SiC Water Producibility-2Q2009		■																										
4-inch Diameter SiC Water Producibility-3Q2009			■																									
4-inch Diameter SiC Water Producibility-4Q2009				■																								
Block 08/10 Component Material Upgrades-1Q2009	■																											
Block 08/10 Component Material Upgrades-1Q2010					■																							
Block 08/10 Component Material Upgrades-2Q2009		■																										
Block 08/10 Component Material Upgrades-2Q2010						■																						
Block 08/10 Component Material Upgrades-3Q2009			■																									
Block 08/10 Component Material Upgrades-3Q2010							■																					
Block 08/10 Component Material Upgrades-4Q2009				■																								
Block 08/10 Power Projects-1Q2009	■																											

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Block 08/10 Power Projects-1Q2010				■																								
Block 08/10 Power Projects-2Q2009		■																										
Block 08/10 Power Projects-2Q2010							■																					
Block 08/10 Power Projects-3Q2009			■																									
Block 08/10 Power Projects-3Q2010											■																	
Block 08/10 Power Projects-4Q2009				■																								
Block 10/12 Hardening projects-1Q2010							■																					
Block 10/12 Hardening projects-2Q2009		■																										
Block 10/12 Hardening projects-2Q2010											■																	
Block 10/12 Hardening projects-3Q2009			■																									
Block 10/12 Hardening projects-4Q2009				■																								
Block 10/12 Hardening projects-4Q2010												■																
Command Destruct-1Q2009	■																											
Command Destruct-1Q2010							■																					
Command Destruct-2Q2009		■																										
Command Destruct-2Q2010											■																	
Command Destruct-3Q2009			■																									
Command Destruct-3Q2010												■																
Command Destruct-4Q2009				■																								
Command Destruct-4Q2010												■																

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Controllable solid DACS development and test-1Q2009	█																											
Controllable solid DACS development and test-1Q2010					█																							
Controllable solid DACS development and test-2Q2009		█																										
Controllable solid DACS development and test-2Q2010						█																						
Controllable solid DACS development and test-3Q2009			█																									
Controllable solid DACS development and test-3Q2010							█																					
Controllable solid DACS development and test-4Q2009				█																								
Controllable solid DACS development and test-4Q2010								█																				
Dorsal and Control Surf Cost Reduction-1Q2009	█																											
Dorsal and Control Surf Cost Reduction-1Q2010						█																						
Dorsal and Control Surf Cost Reduction-2Q2009		█																										
						█																						

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Dorsal and Control Surf Cost Reduction-2Q2010																												
Dorsal and Control Surf Cost Reduction-3Q2009			█																									
Dorsal and Control Surf Cost Reduction-3Q2010							█																					
Dorsal and Control Surf Cost Reduction-4Q2009				█																								
Dorsal and Control Surf Cost Reduction-4Q2010											█																	
Flight Exp. (FE-2) Planning and Development											█																	
HAENS testing-1Q2009	█																											
HAENS testing-1Q2010							█																					
HAENS testing-2Q2009		█																										
HAENS testing-2Q2010								█																				
HAENS testing-3Q2009			█																									
HAENS testing-3Q2010											█																	
HAENS testing-4Q2009				█																								
HAENS testing-4Q2010												█																
Low cost LDACS fabrication and test-1Q2009	█																											
Low cost LDACS fabrication and test-2Q2009		█																										
Low cost LDACS fabrication and test-3Q2009			█																									

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Low cost LDACS fabrication and test-4Q2009				■																								
MMIC/T-R Module Reliability Testing-1Q2009	■																											
MMIC/T-R Module Reliability Testing-1Q2010					■																							
MMIC/T-R Module Reliability Testing-2Q2009		■																										
MMIC/T-R Module Reliability Testing-2Q2010						■																						
MMIC/T-R Module Reliability Testing-3Q2009			■																									
MMIC/T-R Module Reliability Testing-3Q2010							■																					
MMIC/T-R Module Reliability Testing-4Q2009				■																								
MMIC/T-R Module Reliability Testing-4Q2010								■																				
Material Characterization-1Q2009	■																											
Material Characterization-1Q2010						■																						
Material Characterization-2Q2009		■																										
Material Characterization-2Q2010							■																					
Material Characterization-3Q2009			■																									
Material Characterization-3Q2010								■																				
Material Characterization-4Q2009				■																								
Material Characterization-4Q2010									■																			
Radar Sub-Array Demonstrator (MPSD)-1Q2009	■																											
Radar Sub-Array Demonstrator (MPSD)-1Q2010						■																						

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Radar Sub-Array Demonstrator (MPSD)-2Q2009		■																										
Radar Sub-Array Demonstrator (MPSD)-2Q2010							■																					
Radar Sub-Array Demonstrator (MPSD)-3Q2009			■																									
Radar Sub-Array Demonstrator (MPSD)-3Q2010								■																				
Radar Sub-Array Demonstrator (MPSD)-4Q2009				■																								
Radar Sub-Array Demonstrator (MPSD)-4Q2010												■																
Radiation tolerant FPGA Device trials-1Q2009	■																											
Radiation tolerant FPGA Device trials-1Q2010							■																					
Radiation tolerant FPGA Device trials-2Q2009		■																										
Radiation tolerant FPGA Device trials-2Q2010								■																				
Radiation tolerant FPGA Device trials-3Q2009			■																									
Radiation tolerant FPGA Device trials-3Q2010												■																
Radiation tolerant FPGA Device trials-4Q2009				■																								
Radiation tolerant FPGA Device trials-4Q2010												■																
Software Modifications	■	■																										
Software Modifications-1Q2010							■																					

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency

DATE: February 2010

APPROPRIATION/BUDGET ACTIVITY

0400: *Research, Development, Test & Evaluation, Defense-Wide*
 BA 4: *Advanced Component Development & Prototypes (ACD&P)*

R-1 ITEM NOMENCLATURE

PE 0603890C: *Ballistic Missile Defense Enabling Programs*

PROJECT

YX29: *Producibility and Manufacturing Technology*

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Software Modifications-2Q2010							■																					
Software Modifications-3Q2009			■																									
Software Modifications-3Q2010								■																				
Software Modifications-4Q2009				■																								
Specialized solutions-1Q2009	■																											
Specialized solutions-1Q2010							■																					
Specialized solutions-2Q2009		■																										
Specialized solutions-2Q2010							■																					
Specialized solutions-3Q2009			■																									
Specialized solutions-3Q2010								■																				
Specialized solutions-4Q2009				■																								
Specialized solutions-4Q2010											■																	

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Li-Ion Battery Mgnt System Line	4	2009	1	2010
Dual-use Cryocooler Testing	1	2009	1	2009
Optical Mat'ls (Subst./Coatings) Radiation Testing	1	2009	1	2009
Advanced IR Detector with Digital Readout Testing	1	2010	4	2010
4-inch Diameter GaN Wafer Producibility-1Q2009	1	2009	1	2009
4-inch Diameter GaN Wafer Producibility-1Q2010	1	2010	1	2010
4-inch Diameter GaN Wafer Producibility-2Q2009	2	2009	2	2009
4-inch Diameter GaN Wafer Producibility-2Q2010	2	2010	2	2010
4-inch Diameter GaN Wafer Producibility-3Q2009	3	2009	3	2009
4-inch Diameter GaN Wafer Producibility-3Q2010	3	2010	3	2010
4-inch Diameter GaN Wafer Producibility-4Q2009	4	2009	4	2009
4-inch Diameter GaN Wafer Producibility-4Q2010	4	2010	4	2010
4-inch Diameter SiC Wafer Producibility-1Q2009	1	2009	1	2009
4-inch Diameter SiC Wafer Producibility-2Q2009	2	2009	2	2009
4-inch Diameter SiC Wafer Producibility-3Q2009	3	2009	3	2009
4-inch Diameter SiC Wafer Producibility-4Q2009	4	2009	4	2009
Block 08/10 Component Material Upgrades-1Q2009	1	2009	1	2009
Block 08/10 Component Material Upgrades-1Q2010	1	2010	1	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Block 08/10 Component Material Upgrades-2Q2009	2	2009	2	2009
Block 08/10 Component Material Upgrades-2Q2010	2	2010	2	2010
Block 08/10 Component Material Upgrades-3Q2009	3	2009	3	2009
Block 08/10 Component Material Upgrades-3Q2010	3	2010	3	2010
Block 08/10 Component Material Upgrades-4Q2009	4	2009	4	2009
Block 08/10 Power Projects-1Q2009	1	2009	1	2009
Block 08/10 Power Projects-1Q2010	1	2010	1	2010
Block 08/10 Power Projects-2Q2009	2	2009	2	2009
Block 08/10 Power Projects-2Q2010	2	2010	2	2010
Block 08/10 Power Projects-3Q2009	3	2009	3	2009
Block 08/10 Power Projects-3Q2010	3	2010	3	2010
Block 08/10 Power Projects-4Q2009	4	2009	4	2009
Block 10/12 Hardening projects-1Q2010	1	2010	1	2010
Block 10/12 Hardening projects-2Q2009	2	2009	2	2009
Block 10/12 Hardening projects-2Q2010	2	2010	2	2010
Block 10/12 Hardening projects-3Q2009	3	2009	3	2009
Block 10/12 Hardening projects-4Q2009	4	2009	4	2009
Block 10/12 Hardening projects-4Q2010	4	2010	4	2010
Command Destruct-1Q2009	1	2009	1	2009
Command Destruct-1Q2010	1	2010	1	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Command Destruct-2Q2009	2	2009	2	2009
Command Destruct-2Q2010	2	2010	2	2010
Command Destruct-3Q2009	3	2009	3	2009
Command Destruct-3Q2010	3	2010	3	2010
Command Destruct-4Q2009	4	2009	4	2009
Command Destruct-4Q2010	4	2010	4	2010
Controllable solid DACS development and test-1Q2009	1	2009	1	2009
Controllable solid DACS development and test-1Q2010	1	2010	1	2010
Controllable solid DACS development and test-2Q2009	2	2009	2	2009
Controllable solid DACS development and test-2Q2010	2	2010	2	2010
Controllable solid DACS development and test-3Q2009	3	2009	3	2009
Controllable solid DACS development and test-3Q2010	3	2010	3	2010
Controllable solid DACS development and test-4Q2009	4	2009	4	2009
Controllable solid DACS development and test-4Q2010	4	2010	4	2010
Dorsal and Control Surf Cost Reduction-1Q2009	1	2009	1	2009
Dorsal and Control Surf Cost Reduction-1Q2010	1	2010	1	2010
Dorsal and Control Surf Cost Reduction-2Q2009	2	2009	2	2009
Dorsal and Control Surf Cost Reduction-2Q2010	2	2010	2	2010
Dorsal and Control Surf Cost Reduction-3Q2009	3	2009	3	2009
Dorsal and Control Surf Cost Reduction-3Q2010	3	2010	3	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Dorsal and Control Surf Cost Reduction-4Q2009	4	2009	4	2009
Dorsal and Control Surf Cost Reduction-4Q2010	4	2010	4	2010
Flight Exp. (FE-2) Planning and Development	4	2010	4	2010
HAENS testing-1Q2009	1	2009	1	2009
HAENS testing-1Q2010	1	2010	1	2010
HAENS testing-2Q2009	2	2009	2	2009
HAENS testing-2Q2010	2	2010	2	2010
HAENS testing-3Q2009	3	2009	3	2009
HAENS testing-3Q2010	3	2010	3	2010
HAENS testing-4Q2009	4	2009	4	2009
HAENS testing-4Q2010	4	2010	4	2010
Low cost LDACS fabrication and test-1Q2009	1	2009	1	2009
Low cost LDACS fabrication and test-2Q2009	2	2009	2	2009
Low cost LDACS fabrication and test-3Q2009	3	2009	3	2009
Low cost LDACS fabrication and test-4Q2009	4	2009	4	2009
MMIC/T-R Module Reliability Testing-1Q2009	1	2009	1	2009
MMIC/T-R Module Reliability Testing-1Q2010	1	2010	1	2010
MMIC/T-R Module Reliability Testing-2Q2009	2	2009	2	2009
MMIC/T-R Module Reliability Testing-2Q2010	2	2010	2	2010
MMIC/T-R Module Reliability Testing-3Q2009	3	2009	3	2009

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
MMIC/T-R Module Reliability Testing-3Q2010	3	2010	3	2010
MMIC/T-R Module Reliability Testing-4Q2009	4	2009	4	2009
MMIC/T-R Module Reliability Testing-4Q2010	4	2010	4	2010
Material Characterization-1Q2009	1	2009	1	2009
Material Characterization-1Q2010	1	2010	1	2010
Material Characterization-2Q2009	2	2009	2	2009
Material Characterization-2Q2010	2	2010	2	2010
Material Characterization-3Q2009	3	2009	3	2009
Material Characterization-3Q2010	3	2010	3	2010
Material Characterization-4Q2009	4	2009	4	2009
Material Characterization-4Q2010	4	2010	4	2010
Radar Sub-Array Demonstrator (MPSD)-1Q2009	1	2009	1	2009
Radar Sub-Array Demonstrator (MPSD)-1Q2010	1	2010	1	2010
Radar Sub-Array Demonstrator (MPSD)-2Q2009	2	2009	2	2009
Radar Sub-Array Demonstrator (MPSD)-2Q2010	2	2010	2	2010
Radar Sub-Array Demonstrator (MPSD)-3Q2009	3	2009	3	2009
Radar Sub-Array Demonstrator (MPSD)-3Q2010	3	2010	3	2010
Radar Sub-Array Demonstrator (MPSD)-4Q2009	4	2009	4	2009
Radar Sub-Array Demonstrator (MPSD)-4Q2010	4	2010	4	2010
Radiation tolerant FPGA Device trials-1Q2009	1	2009	1	2009

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Radiation tolerant FPGA Device trials-1Q2010	1	2010	1	2010
Radiation tolerant FPGA Device trials-2Q2009	2	2009	2	2009
Radiation tolerant FPGA Device trials-2Q2010	2	2010	2	2010
Radiation tolerant FPGA Device trials-3Q2009	3	2009	3	2009
Radiation tolerant FPGA Device trials-3Q2010	3	2010	3	2010
Radiation tolerant FPGA Device trials-4Q2009	4	2009	4	2009
Radiation tolerant FPGA Device trials-4Q2010	4	2010	4	2010
Software Modifications	1	2009	2	2009
Software Modifications-1Q2010	1	2010	1	2010
Software Modifications-2Q2010	2	2010	2	2010
Software Modifications-3Q2009	3	2009	3	2009
Software Modifications-3Q2010	3	2010	3	2010
Software Modifications-4Q2009	4	2009	4	2009
Specialized solutions-1Q2009	1	2009	1	2009
Specialized solutions-1Q2010	1	2010	1	2010
Specialized solutions-2Q2009	2	2009	2	2009
Specialized solutions-2Q2010	2	2010	2	2010
Specialized solutions-3Q2009	3	2009	3	2009
Specialized solutions-3Q2010	3	2010	3	2010
Specialized solutions-4Q2009	4	2009	4	2009

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX29: <i>Producibility and Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Specialized solutions-4Q2010	4	2010	4	2010

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE				PROJECT				
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>				MD29: <i>Producibility & Manufacturing Technology</i>				
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
MD29: <i>Producibility & Manufacturing Technology</i>	0.000	0.000	36.575	0.000	36.575	33.659	36.523	37.287	38.065	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

The content in Project MD29 is a continuation of the efforts reported in Project YX29 and was explained in that project in PB10.

A. Mission Description and Budget Item Justification

Producibility and Manufacturing is responsible for improving the Ballistic Missile Defense System by applying producibility tools. These tools include Design for Manufacturing and Assembly, supply chain gap analysis, and Continuous Process Improvement (CPI) which includes Lean Six-Sigma, the Theory of Constraints, and others to assist in the elimination of manufacturing waste, reducing process variability, and ensuring first time quality for Ballistic Missile Defense Element Program Offices and their suppliers.

Producibility and Manufacturing conducts Industrial Capability Assessments (ICAs) across the BMDS Industrial Base in order to identify production gaps created by material supplier changes, loss of manufacturing base, and movement of US production overseas. From these assessments, we develop a gap analysis which focuses on methods that can be used to support our US original equipment manufacturers (OEMs), their supplier base, and other organizations that produce end items for the BMDS.

As part of the gap analysis we address US environmental concerns. Our efforts to find a replacement for the environmentally toxic metal Beryllium has focused us on an environmentally friendly Silicon Carbide as a Kill Vehicle telescope construction material. An additional benefit of Silicon Carbide is the telescope assembly also improves the nuclear survivability of Kill Vehicle sensors.

Producibility and Manufacturing ensures technologies and products under development from the Advanced Technology Deputate, items developed through the Small Business Innovative Research program, and efforts developed through the Services MANTECH programs, which map into the BMDS architecture at the appropriate insertion points and in concert with the Elements.

Near term producibility capabilities are accomplished through efforts in a number of key investment areas: Power Systems, Radiation Hardening/ Survivability (both natural and prompt radiation affects), Manufacturing Process Improvements, Electro-Optics/Infrared (EO/IR), Radar Radio Frequency / Electronics, Propulsion, and Advanced Materials and Structures. These capabilities mature through the Next Generation Component Producibility Program and its associated Flight Experiments. The programming of these efforts for BMDS Element integration is within a three to five year timeframe. MDA has designated Producibility and Manufacturing as the command focal point for Continuous Process Improvement (CPI) which includes the utilization of tools such as Lean Six-Sigma, and the Theory of Constraints to assist in the elimination of waste, reducing process variability, and ensuring first time quality for internal and external customers.

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Electro-Optics/Infrared (EO/IR) See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> Complete coordinated multiple low (3-5 units) quantity production and radiation testing of both improved performance and radiation tolerant next generation sensor subsystems/component technologies for flight experiments planned for FY 2011 involving two sensor guided by a controlled divert and attitude control system. The planned sensor technologies are : 1) both one and two color digital (up to 200 frames/sec) Focal Plan Arrays, 2) a common power and data bus architecture/connectors, and a (missile and space) standard power and data bus architecture/connectors and common dual-use split-cryocooler configuration, 3) subwavelength gratings in lieu of coatings to improve the efficiency of both transmissive and reflective optics, and 4) high bandwidth (Ku-band) cross-link telemetry between two separately launched maneuvering vehicles. <i>FY 2011 OCO Plans:</i> NA	0.000	0.000	9.058	0.000	9.058

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Propulsion See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> Complete the fabrication and system flight environmental testing for the low cost liquid divert and attitude control system prior to delivery for the flight experiment program. This effort will provide data on the robustness of the low cost liquid divert and attitude control system design prior to integration and flight to demonstrate component level maturity of seekers, divert and attitude control systems, batteries, and other associated missile defense interceptor components. Complete fabrication and conduct flight environmental testing of the flight experiment solid divert and attitude control system system for use in the flight experiment program. This program will also deliver a flight unit for integration into a maneuvering sensor for the flight experiment program to support the maturity assessments for missile defense components for use in the BMDS. Conduct a system level material durability test of the Lyocell material using an existing BMDS interceptor rocket motor. The plan will be to design, fabricate, integrate and test a drop-in replacement rocket motor nozzle fabricated using Lyocell material then conduct a post test evaluation of the nozzle to determine the material durability. This will add data to determine if Lyocell is a viable candidate as a North American Rayon Corporation (NARC) replacement material. <i>FY 2011 OCO Plans:</i> NA		0.000	0.000	6.354	0.000	6.354
Power Systems		0.000	0.000	5.758	0.000	5.758

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>				
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> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Continue Lean Six Sigma Projects, with DoD battery industrial base manufacturers. Continue testing of space grade Lithium-ion cells from multiple suppliers. Complete Lithium-ion cell modeling effort that will allow systems engineers to design cells for optimum performance to mission requirements. Continue development of oxyhalide fluid flow model which addresses a known problem in the Terminal High Altitude Area Defense (THAAD) ;and Exoatmospheric Kill Vehicle (EKV) ;batteries arising from activation dynamic conditions in electrolyte flow. Continue efforts to find and develop improved nickel-cadmium (NiCd) batteries to replace the poorly performing Commercial Off-The-Shelf (COTS) batteries being used in various BMDS applications.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Radiation Hardening</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p>		0.000	0.000	5.243	0.000	5.243

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Use Independent Research and Development (IR&D) Common Inertial Measurement Unit (CIMU) flight experiment prototypes for preparing Radiation Hardness Assurance (RHA) ground testing of Low Rate Initial Production(LRIP) Common Inertial Measurement Units. This reduces risk for LRIP CIMU data correlation from in-flight performance demonstrated using an unhardened IR&D experimental prototype. Attain Defense Supply Center Columbus qualified manufacturing listing for standard microcircuit drawings used for CIMU nuclear event detector, processor and data bus components. Conduct Kill Vehicle control and electronics RHA Missile Defense Agency Parts, Materials, and Processes Mission Assurance Plan (PMAP) protocol testing for the BMDS. This includes valve / actuator driver multi chip assembly testing for divert attitude control systems relative to MDA-STD-001A level two.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Manufacturing Process Improvements See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p>		0.000	0.000	4.116	0.000	4.116

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> Demonstrate an Automated Supplier Road-mapping tool which is fully integrated, secure, and provides for automatic exchange of supplier information behind MDA firewall. Continue effort to demonstrate a cost-effective method for PMAP compliance which can be used by any prime. Initiate a cost effective process to create a technology development plan utilizing technology roadmaps. Continue efforts to work with BMDS primes and their suppliers to deploy Lean Six Sigma to realize improvements in cost, schedule, and quality. Demonstrate tool that will provide greater insight with regards to obsolete and counterfeit parts. Tool will provide method to comply with PMAP, create ability to track individual component suppliers, inform user where other similar suspect (counterfeit/obsolete) parts are installed and provide visibility of installed parts across BMDS. Continue to support efforts to mitigate risks associated with lead free electronics.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Advanced Materials & Structures See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p>		0.000	0.000	3.483	0.000	3.483

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2011 Base Plans:</i> Conduct more hot fire tests for Lyocell. Develop, test, demonstrate and deliver to Standard Missile 3 (SM-3) Program Office several advanced materials product technologies in support of Preliminary Design Review (PDR) ;-- Compact Antenna, Electronic Enclosures, New Strake with Composite Leading Edge, etc. Conduct more aerothermal testing for advanced materials and rain erosion tests for new radome materials.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Radar RF/Electronics See Description Below</p> <p><i>FY 2009 Accomplishments:</i> NA</p> <p><i>FY 2010 Plans:</i> NA</p> <p><i>FY 2011 Base Plans:</i> Continue the High Power Electronics Reliability Test program for MDA and other joint DoD applications. Conduct reliability testing of Gallium Nitride X-band monolithic microwave integrated circuits. This testing will focus on 1st generation (28V) Gallium Arsenide monolithic microwave integrated circuits (MMIC).</p>		0.000	0.000	2.563	0.000	2.563

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Initiate the X-band Gallium Arsenide monolithic microwave integrated circuits producibility program to support MDA and other joint DoD applications. This is to focus on 1st generation (28V) Gallium Arsenide monolithic microwave integrated circuits. Demonstrate producibility metrics necessary for transition into an operational radar system. Continue the 4-inch Diameter Semi-insulating Gallium Wafer Producibility program. Demonstrate scale-up of wafer size from 2.5-inch diameter to 3-inch diameter. <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	36.575	0.000	36.575

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
	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

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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 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>
• 0603888C: <i>Ballistic Missile Defense Test and Targets</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	50.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	50.226

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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>
• 0603911C: <i>BMD EUROPEAN CAPABILITY</i>											
• 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
• 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

Producibility and Manufacturing adheres to MDA's acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The Producibility and Manufacturing group is MDA's Technology Transition Lead. Ensuring technologies and products under development from the Advanced Technology Deputate, items developed through the Small Business Innovative Research program, and efforts developed through the Services MANTECH programs are mapped into the BMDS architecture at the appropriate insertion points and in concert with the BMDS Elements. By contracting directly with existing and aspiring BMDS subcontractors, suppliers, vendors and small businesses, Producibility and Manufacturing enhances greater competition across the BMDS industrial base. The identification of manufacturing risks is done through Engineering and Manufacturing Readiness Level (EMRL) Assessments. EMRLs are a systems engineering tool that employs widespread industry and BMDS Element interaction to analyze the maturity of manufacturing processes as a factor in the BMDS Risk Management Process. Producibility and Manufacturing conducts Industrial Capability Assessments (ICAs) across the BMDS Industrial Base in order to identify production gaps created by material supplier changes, loss of manufacturing base, and movement of US production overseas. From these assessments, a gap analysis is developed

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
<p>which focuses on methods that can be used to support our US original equipment manufacturers (OEMs), their supplier base, and other organizations that produce end items for the BMDS.</p> <p>As part of the gap analysis, US environmental concerns are addressed. Our efforts to find a replacement for the environmentally toxic metal Beryllium has focused our efforts on pursuing environmentally friendly Silicon Carbide as a Kill Vehicle telescope construction material. An additional benefit of Silicon Carbide is that it will be used to improve the nuclear survivability of Kill Vehicle sensors which is part of the telescope assembly.</p> <p>For efficiency, Producibility and Manufacturing utilizes existing MDA and service contract vehicles when possible to execute the program.</p>		
<u>E. Performance Metrics</u> NA		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			
Electro-Optics/Infrared (EO/IR) EO/IR MD29	C/CPFF	FIBERTEK HERNDON VA	0.000	0.000		1.500	Apr 2011	0.000		1.500	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR - 20098204697769 MD29	C/CPFF	MILTEC HUNTSVILLE AL	0.000	0.000		1.000	Apr 2011	0.000		1.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR - 20098204697773 MD29	TBD/TBD	NASA WALLOPS ISLAND VA	0.000	0.000		1.000	Apr 2011	0.000		1.000	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR - 20098204697777 MD29	C/CPFF	AXSYS ROCHESTER MI	0.000	0.000		1.030	Apr 2011	0.000		1.030	Continuing	Continuing	Continuing
Electro-Optics/Infrared (EO/IR) EO/IR - 20098204697783 MD29	C/CPFF	Electro-Optics Center UNIVERSITY PARK PA	0.000	0.000		3.654	Apr 2011	0.000		3.654	Continuing	Continuing	Continuing
Propulsion PROPULSION MD29	C/CPFF	AEROJET SACRAMENTO CA	0.000	0.000		4.465	Apr 2011	0.000		4.465	Continuing	Continuing	Continuing
Propulsion PROPULSION - 20098204823348 MD29	TBD/TBD	NSWC CARDEROCK BETHESDA MD	0.000	0.000		0.800	Jan 2011	0.000		0.800	Continuing	Continuing	Continuing
Propulsion PROPULSION - 20098204823353 MD29	TBD/TBD	NAVAL AIR WARFARE CENTER WEAPONS DIV CHINA LAKE CA	0.000	0.000		0.100	Oct 2010	0.000		0.100	Continuing	Continuing	Continuing
	TBD/TBD	NSWC CRANE	0.000	0.000		1.095	Apr 2011	0.000		1.095	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			
Power Systems Battery Efforts MD29		CRANE IN											
Power Systems Lithium-Ion modeling MD29	C/FFP	Quallion SYLMAR CA	0.000	0.000		0.575	Jan 2011	0.000		0.575	Continuing	Continuing	Continuing
Power Systems Lean initiatives MD29	C/FFP	Tiburon ALEXANDRIA VA	0.000	0.000		0.530	Apr 2011	0.000		0.530	Continuing	Continuing	Continuing
Power Systems BMDS Program Battery MD29	TBD/TBD	NSWC CRANE CRANE IN	0.000	0.000		2.484	Jul 2011	0.000		2.484	Continuing	Continuing	Continuing
Power Systems Thermal Battery Process Improvements MD29	C/FFP	Enser ST PETERSBURG FL	0.000	0.000		0.200	Jan 2011	0.000		0.200	Continuing	Continuing	Continuing
Radiation Hardening Rad Hard MD29	C/CPFF	KEARFOTT LITTLE FALLS NJ	0.000	0.000		4.254	Apr 2011	0.000		4.254	Continuing	Continuing	Continuing
Manufacturing Process Improvements BMDS SUPPLY CHAIN MD29	C/CPFF	Advanced Technology Institute NORTH CHARLESTON SC	0.000	0.000		1.572	Jan 2011	0.000		1.572	Continuing	Continuing	Continuing
Manufacturing Process Improvements Continuous Process Improvement MD29	C/CPFF	Dynamics Research Corp (DRC) ANDOVER MA	0.000	0.000		1.400	Jan 2011	0.000		1.400	Continuing	Continuing	Continuing
Manufacturing Process Improvements	TBD/TBD	NSWC CRANE CRANE IN	0.000	0.000		0.100	Jan 2011	0.000		0.100	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			
Commercial Off-The-Shelf MD29													
Advanced Materials & Structures ADVANCED MATERIALS MD29	C/CPFF	SMDC/ SAN DIEGO COMPOSITES SAN DIEGO CA	0.000	0.000		1.954	Apr 2011	0.000		1.954	Continuing	Continuing	Continuing
Advanced Materials & Structures ADVANCED MATERIALS - 20098204860438 MD29	TBD/TBD	SOUTHERN RESEARCH BIRMINGHAM AL	0.000	0.000		0.500	Jan 2011	0.000		0.500	Continuing	Continuing	Continuing
Advanced Materials & Structures ADVANCED MATERIALS - 20098204860442 MD29	TBD/TBD	DEFENSE CONTRACT MAGANGEMENT AGENCY/IAC ALEXANDRIA VA	0.000	0.000		0.025		0.000		0.025	Continuing	Continuing	Continuing
Radar RF/Electronics BULK Semi-Insulating Gallium Nitride FOR Radio Frequency MD29	C/CPFF	AIR FORCE (AFRL) ALBUQUERQUE NM	0.000	0.000		0.700	Apr 2011	0.000		0.700	Continuing	Continuing	Continuing
Radar RF/Electronics RELIABILITY TESTING MD29	TBD/TBD	NAVAL RESEARCH LAB WASHINGTON DC	0.000	0.000		0.200	Apr 2011	0.000		0.200	Continuing	Continuing	Continuing
Radar RF/Electronics TRI-SERVICE RELIABILITY TESTING MD29	TBD/TBD	AFRL ALBUQUERQUE NM	0.000	0.000		0.300	Apr 2011	0.000		0.300	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			
Radar RF/Electronics 100mm Semi-Insulating Silicon Carbide SUBSTRATES MD29	TBD/TBD	AFRL ALBUQUERQUE NM	0.000	0.000		0.489	Apr 2011	0.000		0.489	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		29.927		0.000		29.927			

Remarks

NA

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			
Electro-Optics/Infrared (EO/IR) CSS MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
Propulsion CSS MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
Propulsion OTHER DOD MD29	TBD/TBD	SMDC HUNTSVILLE AL	0.000	0.000		0.115	Apr 2011	0.000		0.115	Continuing	Continuing	Continuing
Power Systems CONTRACT SUPPORT SERVICES (CSS) MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
	C/FFP	DRC	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</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			
Radiation Hardening CSS MD29		ANDOVER MA											
Radiation Hardening OTHER DOD MD29	TBD/TBD	SMDC HUNTSVILLE AL	0.000	0.000		0.115	Apr 2011	0.000		0.115	Continuing	Continuing	Continuing
Manufacturing Process Improvements JOINT DEFENSE MANUFACTURING TECHNOLOGY PANEL MD29	C/CPFF	TIBURON ALEXANDRIA VA	0.000	0.000		0.170	Apr 2011	0.000		0.170	Continuing	Continuing	Continuing
Manufacturing Process Improvements CSS MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
Advanced Materials & Structures CSS MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
Advanced Materials & Structures OTHER DOD MD29	TBD/TBD	SMDC HUNTSVILLE AL	0.000	0.000		0.130	Apr 2011	0.000		0.130	Continuing	Continuing	Continuing
Radar RF/Electronics CSS MD29	C/FFP	DRC ANDOVER MA	0.000	0.000		0.541	Apr 2011	0.000		0.541	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		4.317		0.000		4.317			

Remarks

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Electro-Optics/ Infrared (EO/IR) GOVERNMENT(GOVT) SALARIES AND TRAVEL MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
Propulsion GOVT SALARIES AND TRAVEL MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
Power Systems GOVT SALARIES AND TRAVEL MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
Radiation Hardening GOVT SALARIES AND TRAVEL` MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
		MDA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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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			
Manufacturing Process Improvements GOVT SALARIES AND TRAVEL MD29	Various/ Various	ARLINGTON VA											
Advanced Materials & Structures GOVT SALARIES AND TRAVEL MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
Radar RF/Electronics GOVT SALARIES AND TRAVEL MD29	Various/ Various	MDA ARLINGTON VA	0.000	0.000		0.333	Jul 2011	0.000		0.333	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		2.331		0.000		2.331			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	36.575	0.000	36.575			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
RADAR/MONOLITHIC MICROWAVE INTEGRATED CIRCUITS (MMIC) / TRANSMIT-RECEIVE MODULE RELIABILITY TESTING 1/11									■																			
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 2/11										■																		
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 3/11											■																	
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 4/11												■																
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/11									■																			
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/11										■																		
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/11										■																		
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 4/11												■																
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/12													■															
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/12														■														
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/12															■													

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
RAD HARD/HARDENING PROJECTS 4/11												■																
RAD HARD/HARDENING PROJECTS 1/12													■															
RAD HARD/HARDENING PROJECTS 2/12														■														
RAD HARD/HARDENING PROJECTS 3/12															■													
RAD HARD/HARDENING PROJECTS 4/12															■													
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/13																					■							
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/13																					■							
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/13																												
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 4/13																												
Flight Experiment 2													■															
Flight Experiment 3																												
Flight Experiment 4																												■
Flight Experiment controllable solid divert attitude control system static sub-system test 1/11																												
Low cost liquid divert attitude control system flight experiment 2/11																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015							
	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				
Low cost liquid divert attitude control system qualification complete 1/11																																
Lyocell nozzle durability static hot fire test 2/11																																

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
RADAR/MONOLITHIC MICROWAVE INTEGRATED CIRCUITS (MMIC) / TRANSMIT-RECEIVE MODULE RELIABILITY TESTING 1/11	1	2011	1	2011
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 2/11	2	2011	2	2011
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 3/11	3	2011	3	2011
RADAR/MMIC / T-R MODULE RELIABILITY TESTING 4/11	4	2011	4	2011
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/11	1	2011	1	2011
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/11	2	2011	2	2011
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/11	2	2011	2	2011
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 4/11	4	2011	4	2011
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/12	1	2012	1	2012
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/12	2	2012	2	2012
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/12	3	2012	3	2012
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 4/12	4	2012	4	2012
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 2/11	2	2011	2	2011
RAD HARD/HAENS TESTING 2/11	2	2011	2	2011
RAD HARD/HAENS TESTING 3/11	3	2011	3	2011
RAD HARD/HAENS TESTING 4/11	4	2011	4	2011
RAD HARD/HAENS TESTING 1/12	1	2012	1	2012
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 1/11	1	2011	1	2011

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
RAD HARD/HAENS TESTING 1/11	1	2011	1	2011
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 2/12	2	2012	2	2012
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 3/11	3	2011	3	2011
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 4/11	4	2011	4	2011
RAD HARD/RADIATION TOLERANT FPGA DEVICE TRIALS 1/12	1	2012	1	2012
RAD HARD/HARDENING PROJECTS 1/11	1	2011	1	2011
RAD HARD/HARDENING PROJECTS 2/11	2	2011	2	2011
RAD HARD/HARDENING PROJECTS 3/11	3	2011	3	2011
RAD HARD/HARDENING PROJECTS 4/11	4	2011	4	2011
RAD HARD/HARDENING PROJECTS 1/12	1	2012	1	2012
RAD HARD/HARDENING PROJECTS 2/12	2	2012	2	2012
RAD HARD/HARDENING PROJECTS 3/12	3	2012	3	2012
RAD HARD/HARDENING PROJECTS 4/12	3	2012	3	2012
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 1/13	1	2013	1	2013
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 2/13	1	2013	1	2013
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 3/13	3	2013	3	2013
RADAR/RADAR SUB-ARRAY DEMONSTRATOR 4/13	4	2013	4	2013
Flight Experiment 2	4	2011	4	2011
Flight Experiment 3	4	2013	4	2013
Flight Experiment 4	4	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD29: <i>Producibility & Manufacturing Technology</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Flight Experiment controllable solid divert attitude control system static sub-system test 1/11	1	2011	1	2011
Low cost liquid divert attitude control system flight experiment 2/11	2	2011	2	2011
Low cost liquid divert attitude control system qualification complete 1/11	1	2011	1	2011
Lyocell nozzle durability static hot fire test 2/11	2	2011	2	2011

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</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
YX30: <i>BMD Information Management Systems</i>	103.676	105.536	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	209.212
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

The budget increase from FY 2009 to FY 2010 is to sustain the existing Information Technology (IT) infrastructure in the National Capital Region (NCR) during the Base Realignment and Closure (BRAC) transition while building the new IT infrastructure at Headquarters Command Center (HQCC)/Ft. Belvoir and Von Braun III/Huntsville Alabama. During this period additional funding is required to support the IT infrastructure build-out; redundant telecommunications; simultaneous IT operations/parallel infrastructure; end-user and role-based technical training for improved quality of service; increased Information Assurance (IA) awareness, monitoring, and protection; wireless telephony; and expanded wireless for mobile workforce.

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project YX30 for FY 2011- 2015 is now captured in Project MD30 for FY 2011-2015.

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense (BMD) Information Management Systems Project funds the Information Technology (IT) and telecommunications infrastructure of the Agency. The IT and telecommunications infrastructure is critical to the day-to-day functions of the MDA Director and MDA senior leaders to communicate (classified and unclassified) with Congress, senior DoD and other U.S. government agency personnel, Combatant Commanders, North Atlantic Treaty Organization (NATO) partners, and other industry partners. Communication among these organizations facilitates the MDA mission to continue as one of developing and fielding an integrated Ballistic Missile Defense System (BMDS) to defend the United States, our deployed forces, allies and friends against all ranges of enemy ballistic missiles in all phases of flight. The MDA IT infrastructure and telecommunication capabilities support rigorous missile defense testing and facilitates the development of technologies to hedge against future missile threat growth. Communications are vital for missile defense to continue a viable homeland defense against rogue threats and to provide the integration required to defend deployed forces, allies, and friends against theater threats. The IT and telecommunications infrastructure consists of MDA secure information technology systems, data centers, operations and monitoring centers which are vital to support the strategic mission of the Agency and necessary to meet disaster recovery and continuity of operations requirements. The IT and telecommunications infrastructure is required to sustain access to the Secret Internet Protocol Router Network (SIPRNET), Nonsecure Internet Protocol Router Network (NIPRNET), MDA classified and unclassified networks, classified and unclassified video teleconferencing services, test and business knowledge data centers, the Defense Research Engineering Network (DREN), and the Joint Worldwide Intelligence Communication System (JWICS). JWICS is essential to the MDA to obtain and provide intelligence data used to feed the Command, Control,

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<p>Battle Management and Communication project, the Countermeasures/Counter-Countermeasures projects, and Modeling and Simulation projects. The above initiatives will provide for the efficient operation and safeguarding of all agency information. This project also funds Information Management/Information Technology operations for multiple systems in existing as well as new facilities at Dahlgren, Virginia and during the MDA transition to Huntsville, Alabama and Alexandria, Virginia.</p> <p>To support the Director`s intent to significantly improve all layers of our Ballistic Missile Defense System (BMDS), this project funds IT initiatives that include:</p> <p>Operational support to provide critical day-to-day quality of service IT support to the Agency mission Information Technology enterprise architecture that is compliant with DoD and Federally mandatory standards for the business and mission support activities of the MDA Business Transformation Agency efforts to provide DoD approved solutions for information sharing, electronic records management, financial management, and decision support systems to achieve more effective, efficient and secure business and mission support activities throughout MDA Knowledge data center integration and universal access for information sharing capabilities Consolidated information technology infrastructure in support of information technology line of business goals/objectives Information assurance controls and computer network defense of MDA networks infrastructure for disaster recovery and continuity of operations capabilities Certification and accreditation processes that support the BMDS, test assets, and administrative support networks Information technology policies, guidance, planning, oversight, and monitoring to ensure continued compliance with DoD mandated initiatives, statutes, regulations, directives, and policies</p> <p>The BMD Information Management Systems project YX30 includes the following IT initiatives:</p> <p>-US South Metropolitan Area Network (US SOUTH MAN) This initiative consists of Information Technology support services required to operate and maintain the classified and unclassified local area networks in the Huntsville, Alabama region. This includes operations and maintenance of hardware, software and help desk services in support of BMDS mission, research and test efforts as well as MDA business processes. The US South Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. The increase in funding is for Information Management/Information Technology operations in support of new facilities in Huntsville, Alabama. The funding profile variance is due to Information Technology infrastructure build-out, test and activation efforts and the increase in the user base (2,200 to 5,500) for MDA facilities in Huntsville, Alabama and the decommissioning of leased facilities. This initiative is consolidated and reported under the General IT Services initiative for Project MD30 for FY 2011-FY 2015.</p>		

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<p>-US West Metropolitan Area Network (US WEST MAN) This initiative consists of Information Technology management support to monitor the Airborne Laser Program (ABL) connectivity to the MDA classified and unclassified networks at Kirtland Air Force Base, New Mexico and Edwards Air Force Base, California. The Information Technology Office West coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. This initiative is consolidated and reported under the General IT Services initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-US National Capital Region Metropolitan Area Network (US NCR MAN) This initiative consists of Information Technology support services required to operate and maintain the classified and unclassified local area networks in the National Capital Region and the Aegis Program Office at Dahlgren, Virginia. This includes operations and maintenance of hardware, software and help desk services in support of BMDS mission, research and test efforts as well as MDA business processes. The National Capital Region Information Technology Office coordinates with the MDA Enterprise Network Operations Security Center to implement Information Assurance Vulnerability Assessments issued by the Joint Task Force-Global Network Operations. The funding profile variance is due to build-out, test and activation efforts for the MDA HQCC at Alexandria, Virginia, core application transitions to Huntsville, Alabama and preparation for decommissioning of National Capital Region facilities through FY 2011. This initiative is consolidated and reported under the General IT Services initiative for Project MD30 for FY 2011- FY 2015.</p> <p>-Enterprise Plans, Policies, and Analyses This initiative funds efforts that support development and implementation of Agency-wide Information Management/Information Technologies strategies, policies, guidelines, and management processes to ensure efficient and effective oversight of information resources. These efforts ensure that the policies and budget are in place to support the BMDS mission and to comply with statutory and DoD policies including: the Clinger-Cohen Act, the Federal Information Security Management Act, the Presidents Management Agenda - E-Government reporting, and Office of Management and Budget (OMB) IT budget reporting policies. Specific examples include development, implementation, and oversight of various plans, guidelines, and policies to include the MDA Information Resource Strategic Plan, the Information Assurance Program Plan, and the MDA Information Management/Information Technology Capital Planning and Investment Control process. This initiative also includes budget formulation and execution as well as contract management and oversight. This initiative is consolidated and reported under the IT Consumables/Sustainment initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-MDA General Services Wide Area Network This initiative consists of telecommunications equipment and leased communications for classified and unclassified voice and data circuits, video teleconferencing capabilities, and circuit access to the Joint Worldwide Intelligence Communications System (JWICS). The MDA Special Access Program Wide Area Network supports</p>		

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<p>BMDS planning and contingency operations. Circuits and associated services are provided by the Defense Information Systems Agency (DISA) as well as the Defense Research and Engineering Network (DREN). These circuits provide access to over 80 government and industry partner locations to enable information sharing of BMD-related data throughout the global MDA Enterprise. This initiative is consolidated and reported under the Unified Communications initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-MDA Video Teleconferencing The MDA Video Teleconferencing initiative supports management, engineering, systems integration, operation, maintenance and technical support services for the teleconferencing systems and implementation of a high-bandwidth, Video Over Internet Protocol (VoIP) capability to enhance resolution and reduce per-minute unit cost. Primary MDA video-teleconferencing sites include the National Capital Region, MDA Integration Operations Center, Airborne Laser at Kirtland Air Force Base in New Mexico, and Space Tracking and Surveillance System at Los Angeles California Air Force Base. Future sites will include numerous offices in Huntsville, AL including Terminal High Altitude Area Defense, Targets and Countermeasures, and Ground Based Missile Defense. This initiative is consolidated and reported under the Unified Communications initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-MDA Knowledge On-Line This initiative includes costs to manage content, operate and maintain the unclassified and classified MDA Portals. The MDA Portals are a vital asset used to share information and knowledge throughout the Missile Defense community. This initiative also supports the operations and maintenance of the Visual Information Production Center, a state-of-the-art, high capacity graphic and video production center, which provides services to senior leadership and agency employees. This initiative is consolidated and reported under the Knowledge and Information Management initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-Core Enterprise Services In accordance with the Clinger Cohen Act, DoD Directive 5000.15 and DoD Records Management Program, this initiative provides for the licensing and sustainment of DoD approved enterprise information applications. DoD mandated and mission essential examples include BMD System Asset Management, BMDS Integrated Master Schedule, Electronic Records Management System, E-Tasker, Integrated Acquisition Environment, data management tool, financial management tools, personnel tracking system, MDA Identify and Management Infrastructure application, Computer-Aided Facilities Management, and the MDA Corporate University Enterprise (web-based learning management system). The Defense Information Systems Agency sponsored collaboration tool (IBM Collaboration Suite) will be implemented to allow real-time collaboration throughout the MDA enterprise, the BMDS operational sites and the Combatant Command Headquarters. In addition this initiative funds the Program Resource Internet Database Environment (PRIDE) which is a database management tool and the MDA Standard Procurement System (SPS) helpdesk and application support. This initiative is consolidated and reported under the Knowledge and Information Management initiative for Project MD30 for FY 2011-FY 2015.</p>		

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<p>-Enterprise Information Assurance This initiative supports the Federal Information Security Management Act (FISMA) and is a key priority of the MDA Director. This vital program of the BMDS and MDA Enterprise consists of Information Assurance, Computer Network Defense, Network Situational Awareness, Certification and Accreditation activities, and Information Assurance Workforce training and certification to comply with DoD Information Assurance directives, instructions and guidelines. The Information Assurance program provides system security engineering, development, and testing to ensure that command, control, communications, computing and intelligence systems are protected against malicious or accidental attacks. The MDA Information Assurance program provides the network security operations centers and supporting processes to protect and defend information and information systems. The MDA Enterprise Network Operations Security Center manages network situational awareness and status reporting. The MDA Computer Emergency Response Team (CERT) coordinates with the Joint Task Force-Global Network Operations (JTF-GNO) to identify and implement network vulnerability updates. This ensures the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems. This initiative is consolidated and reported under the Information Assurance initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-Architecture and Implementation Engineering Architecture and Implementation Engineering supports the MDA and the Ballistic Missile Defense Systems (BMDS) Core projects through the design and planning of an MDA Enterprise Architecture that is compliant with the DoD Federal enterprise architecture standards. The MDA Implementation Engineering efforts will improve the management of and access to information throughout the MDA. This is done through the integration of technology with Agency processes; transition planning for the MDA Alexandria, Virginia and multiple Huntsville, Alabama facilities; and decommission plans for multiple NCR facilities. These efforts will ensure the continuity of the Information Management and Information Technology services necessary for the design, development, modeling, and testing of the BMDS. This initiative is consolidated and reported under the IT Consumables/Sustainment Engineering initiative for Project MD30 for FY 2011-FY 2015.</p> <p>-Service Information Management/Information Technology for Executing Agents This initiative provides recurring funds to the U.S. Army Space and Missile Defense Command (SMDC) a MDA Executing Agent in support of BMDS research and mission related efforts in Huntsville, Alabama. Funds provided to SMDC support continuing operations and maintenance of their communications and Information Technology infrastructure in the Von Braun I facility in Huntsville, Alabama. This includes the communications costs, help desk services, and hardware and software sustainment tool used by MDA for planning and budgeting efforts.</p> <p><u>B. Accomplishments/Planned Program (\$ in Millions)</u></p>		

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
US South Metropolitan Area Network (US SOUTH MAN) See Description Below <i>FY 2009 Accomplishments:</i> -Implemented Information Assurance control improvements in accordance with established Plan of Action and Milestones -Monitored networks for user compliance with DoD policies, and reported incidents -Provided web-based training to MDA users on new applications and upgrades -Maintained the helpdesk and network services -Provided technical training to Information Technology staff <i>FY 2010 Plans:</i> -Implement Information Assurance control improvements in accordance with established Plan of Action and Milestones -Monitor networks for user compliance with DoD policies, and reported incidents -Test and implement software application upgrades and provided web-based training to MDA users on new applications and upgrades -Maintain the network and help desk services -Provide technical training to Information Technology staff <i>FY 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans. <i>FY 2011 OCO Plans:</i> NA		13.931	14.201	0.000	0.000	0.000
US National Capital Region Metropolitan Area Network (US NCR MAN) See Description Below		14.652	11.624	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>-Monitored networks for user compliance with DoD policies, and reported incidents -Maintained MDA Information Technology system interface configuration control</p> <p><i>FY 2010 Plans:</i> -Coordinate the implementation of vulnerability assessments in the Albuquerque area -Monitor networks for user compliance with DoD policies, and reported incidents -Maintain MDA Information Technology system interface configuration control</p> <p><i>FY 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Enterprise Plans, Policies & Analyses See Description Below</p> <p><i>FY 2009 Accomplishments:</i> -Developed, updated, and published policies, guidelines and processes to comply with applicable legislation, DoD and MDA guidance -Updated FYDP budget plans, documentation and reports for future years to comply with OMB, OSD and MDA guidance -Executed, tracked and reported the FY09 Information Technology budget -Conducted assessments, prepared compliance documentation and reported status to MDA Senior Leadership, OSD, OMB, and DoD</p> <p><i>FY 2010 Plans:</i> -Develop, update, coordinate, and publish policies, guidelines and processes to comply with applicable legislation, DoD and MDA guidance</p>	6.821	5.778	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 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>MDA Video Teleconferencing See Description Below</p> <p><i>FY 2009 Accomplishments:</i> -Operated and maintained the Video Teleconference Scheduling Operations Center in support of classified and unclassified MDA mission, test and business operations -Operated and maintained recurring operations and maintenance for Video Teleconference rooms and equipment to include multiple Nation Capital Region locations, Aegis Program Office facility at Dahlgren, Virginia, the Missile Defense Integration Operations Center (MDIOC) at Shriever Air Force Base, Colorado, and the multiple MDA locations in Huntsville, Alabama -Designed and implemented a training program for Video Teleconference room facilitators</p> <p><i>FY 2010 Plans:</i> -Operate and maintain the Video Teleconference Scheduling Operations Center in support of classified and unclassified MDA mission, test and business operations -Operate and maintain recurring operations and maintenance for Video Teleconference rooms and equipment to include multiple Nation Capital Region locations, Aegis Program Office facility at Dahlgren, Virginia, the Missile Defense Integration Operations Center (MDIOC) at Shriever Air Force Base, Colorado, and the multiple MDA locations in Huntsville, Alabama -Implement and test Video Teleconference rooms in the new facility in Huntsville, Alabama -Provide recurring training for Video Teleconference room facilitators</p>		7.151	9.071	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 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>MDA Knowledge On-Line See Description Below</p> <p><i>FY 2009 Accomplishments:</i> -Continued implementation of MDA Portal (web-based) training programs to include information assurance, business applications, workforce certification, security, and ethics -Operated and maintained MDA Portal services -Sustained recurring operation and maintenance of graphic and video production capabilities</p> <p><i>FY 2010 Plans:</i> -Continue implementation of MDA Portal (web-based) training programs to include information assurance, business applications, workforce certification, security, and ethics -Operate and maintain MDA Portal services -Sustain recurring operation and maintenance of graphic and video production capabilities</p> <p><i>FY 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>	14.024	13.299	0.000	0.000	0.000
Core Enterprise Applications	7.662	8.777	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></p> <ul style="list-style-type: none"> -Managed software assessment program and sustained approved software applications -Sustained the BMDS Integrated Master Schedule and the BMD Asset Management Tool -Developed concept of operations for MDA use of Microsoft Sharepoint with Video Teleconferencing services to support real-time research, test and operational information exchange -Conducted privacy impact surveys and compliance reporting -Continued implementation of DoD mandated business management modernization applications and sustained MDA financial and contractual support systems <p><i>FY 2010 Plans:</i></p> <ul style="list-style-type: none"> -Manage software assessment program and sustained approved software applications -Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool -Conduct privacy impact surveys and compliance reporting -Continue implementation of DoD mandated business management modernization applications ; and sustained MDA financial and contractual support systems <p><i>FY 2011 Base Plans:</i></p> <p>See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i></p> <p>NA</p>					
<p>Enterprise Information Assurance</p> <p>See Description Below</p>	14.645	22.555	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></p> <ul style="list-style-type: none"> -Revised and updated Information Assurance certification packages for test, administrative and business information technology systems reported DoD and OMB -Completed implementation of network situational awareness tools for the Enterprise Network Operations Security Center -Conducted certification evaluations of mission, test and administrative systems and assisted in the development of the Plan of Actions and Milestones to correct Information Assurance deficiencies -Managed the Information Assurance Workforce Improvement Program to certify Information Assurance professionals and reported compliance in accordance with Federal Information Security Management Act (FISMA) and DoDM 8570.1, achieving the DoD certification goal -Completed annual Information Assurance user training for the MDA workforce -Provided Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs <p><i>FY 2010 Plans:</i></p> <ul style="list-style-type: none"> -Revise and update Information Assurance certification packages for test, administrative and business information technology systems reported DoD and OMB -Complete implementation of network situational awareness tools for the Enterprise Network Operations Security Center -Conduct certification evaluations of mission, test and administrative systems and assist in the development of the Plan of Actions and Milestones to correct Information Assurance deficiencies -Manage the Information Assurance Workforce Improvement Program to certify Information Assurance professionals and report compliance in accordance with Federal Information Security Management Act (FISMA) and DoDM 8570.1, achieving the DoD certification goal -Complete annual Information Assurance user training for the MDA CIO IT workforce -Provide Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs 					

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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 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>Architecture and Implementation Engineering</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i></p> <ul style="list-style-type: none"> -Architected and developed plans for telecommunication circuits in support of global BMDS test and mission data sharing requirements -Executed revisions to realignment and transition plans to support the MDA relocation to Huntsville and Fort Belvoir -Executed plans to expand MDA enterprise networks to support knowledge center integration and research collaboration -Revise and tested contingency plans for Information Technology systems at Schriever Air Force Base, Colorado and Huntsville, Alabama -Developed decommission plans National Capital Region facilities <p><i>FY 2010 Plans:</i></p> <ul style="list-style-type: none"> -Architect and develop plans for telecommunication circuits in support of global BMDS test and mission data sharing requirements -Maintain the Information Technology infrastructure at Huntsville, Alabama and Alexandria, Virginia -Execute realignment and transition plans to support the MDA relocation to Huntsville, Alabama and Alexandria, Virginia -Revise and test contingency plans for Information Technology systems at Dahlgren, Virginia, Schriever Air Force Base, Colorado, and Huntsville, Alabama 	7.214	6.186	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>-Continue decommission plans for National Capital Region facilities</p> <p><i>FY 2011 Base Plans:</i> See Project MD30 for FY 2011 Plans.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Service Information Management/Information Technology for Executing Agents</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i></p> <ul style="list-style-type: none"> -Operated and maintained Information Technology networks in support of MDA efforts in Huntsville, Alabama -Implemented Information Assurance control improvements in accordance with established Plan of Action and Milestones -Monitored networks for user compliance with DoD policies, and reported incidents -Tested and implemented software application upgrades -Maintained the network and help desk services <p><i>FY 2010 Plans:</i></p> <ul style="list-style-type: none"> -As a result of the completion of the BRAC transition to Huntsville, this Information Technology support will be transferred to and provided by the MDA Chief Information Office. <p><i>FY 2011 Base Plans:</i></p> <p><i>FY 2011 OCO Plans:</i> NA</p>		2.700	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
Accomplishments/Planned Programs Subtotals	103.676	105.536	0.000	0.000	0.000

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
• 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
• 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
	23.250	12.492	10.942	0.000	10.942	11.182	11.347	11.749	12.155	0	93.117

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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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>
• 0603895C: <i>BMD SYSTEM SPACE PROGRAM</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
• 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
	0.000	0.000	66.969	0.000	66.969	123.851	184.800	348.360	482.952	0	1,206.932

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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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 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>
• 0604883C: <i>PRECISION TRACKING SPACE SYSTEM</i>											
• 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

MDA employs a federated acquisition strategy for the procurement and sustainment of the MDA Enterprise. This strategy utilizes an Engineering and Architectural Planning support contractor with approved engineering designs and plans are then implemented, sustained, and operated by local contractors in each regional area (Arlington, Virginia; Dahlgren, Virginia; Huntsville, Alabama; Colorado Springs, Colorado; Albuquerque, New Mexico; and Los Angeles, California).

E. Performance Metrics

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
US South Metropolitan Area Network (US SOUTH MAN) IT Equipment YX30	C/Various	Various Various	11.300	3.422	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
US South Metropolitan Area Network (US SOUTH MAN) IT HSV O&M Support YX30	C/CPAF	ASD AL	8.595	8.647	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
US South Metropolitan Area Network (US SOUTH MAN) Contract Support Services YX30	TBD/TBD	General Dynamics AL	0.526	0.422	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
US South Metropolitan Area Network (US SOUTH MAN) IT	C/CPAF	Northrop Grumman VA	0.323	0.194	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>					PROJECT YX30: <i>BMD Information Management Systems</i>				

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			
Integration Support YX30													
US South Metropolitan Area Network (US SOUTH MAN) Customer Relations YX30	C/CPAF	ASD VA	0.666	0.655	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
US South Metropolitan Area Network (US SOUTH MAN) Portfolio Management-1 YX30	C/CPAF	ASD AL	3.024	0.229	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
US South Metropolitan Area Network (US SOUTH MAN) Portfolio Management-2 YX30	C/CPFF	BAH AL	0.000	0.632	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
US National Capital Region Metropolitan Area Network (US NCR MAN) Computing & Network Services YX30	C/CPAF	Northrop Grumman VA	29.057	10.571	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
US National Capital Region Metropolitan Area Network (US NCR MAN) IM/IT Contract Support Services YX30	TBD/TBD	General Dynamics IT VA	3.832	1.053	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
US West Metropolitan Area Network (US WEST MAN) Contract Support Services YX30	TBD/TBD	General Dynamics IT NM	0.513	0.388	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>					PROJECT YX30: <i>BMD Information Management Systems</i>				

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			
Enterprise Plans, Policies & Analyses Contract Support Services YX30	TBD/TBD	General Dynamics IT VA	3.483	1.331	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses CIO Support/Exec Mgt/ Program Management Implementation Board YX30	Various/ Various	Various AL	1.534	1.274	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses CIO Support-1 YX30	TBD/TBD	Decisive Analytics VA	3.372	0.965	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses CIO Travel YX30	Various/ Various	Various Various	0.602	0.318	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses Publications/ Subscriptions YX30	Various/ Various	Various Various	0.695	0.689	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses Customer Relations YX30	C/CPAF	SRA VA	1.760	0.480		0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Plans, Policies & Analyses CIO Support-2 YX30	C/CPAF	SRA VA	0.660	0.721		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>				PROJECT YX30: <i>BMD Information Management Systems</i>					

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			
MDA General Service Wide Area Networks Leased Communications-1 YX30	TBD/TBD	DISA IL	2.311	1.590	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Leased Communications-2 YX30	TBD/TBD	Army Rsch Lab MD	6.070	3.275	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks WAN Eng/Sustainment YX30	C/CPAF	Northrop Grumman CO	7.556	3.517	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Leased Communications-3 YX30	TBD/TBD	DTSW VA	0.250	0.265	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Contract Support Services YX30	C/CPFF	General Dynamics IT VA	2.274	1.393	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Comm SAPWAN/JWICS YX30	C/CPAF	Northrop Grumman VA	0.064	0.127	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Communications SAPWAN YX30	TBD/TBD	FEDSIM VA	0.565	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</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			
MDA General Service Wide Area Networks Army DOIM YX30	TBD/TBD	Army/Al AL	0.432	0.583	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Wireless YX30	C/Various	Various AL	4.022	2.650	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA General Service Wide Area Networks Leased Communications Sonet Ring YX30	TBD/TBD	DTSW VA	0.000	0.257		0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Video Teleconferencing Contract Support Services -1 YX30	C/CPFF	General Dynamics IT VA	0.880	0.421	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Video Teleconferencing VTC Support & Maintenance-1 YX30	C/CPAF	Microtech VA	12.577	8.438	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Video Teleconferencing VTC Support & Maintenance-2 YX30	C/CPAF	ODC -	1.150	0.212	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Video Teleconferencing Contract Support Services-2 YX30	C/CPAF	JTAAS CO	0.354	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
	C/CPAF	Phacil	10.950	6.758	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</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			
MDA Knowledge On-Line MDA Portal YX30		VA											
MDA Knowledge On-Line Visual Info Production Center YX30	SS/CPFF	CSC VA	7.474	4.240	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Knowledge On-Line Business Innovation YX30	C/CPAF	ASD AL	0.000	0.262	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Knowledge On-Line Classified MKO YX30	C/CPAF	Northrop Grumman VA	4.194	1.078	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
MDA Knowledge On-Line Knowledge Management YX30	C/CPAF	FEDSIM/SRA VA	3.182	0.961	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Core Enterprise Applications PRIDE Maintenance Support YX30	TBD/TBD	SMDC/CIMS AL	1.966	0.995	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Core Enterprise Applications Contract Support Services YX30	TBD/TBD	General Dynamics IT VA	3.695	1.403	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Core Enterprise Applications Application Support YX30	C/CPAF	Northrop Grumman CO	2.361	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Core Enterprise Applications Standard	TBD/TBD	SPS JPMO VA	0.588	0.412	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Procurement Says Support YX30													
Core Enterprise Applications Software License/Maintenance YX30	C/CPAF	SRA VA	3.644	4.059	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Core Enterprise Applications Microsoft Licenses YX30	C/TBD	FEDSIM VA	1.800	1.908	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance Certification & Accreditation Support YX30	C/CPAF	FEDSIM VA	1.041	0.721	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance Certification & Accreditation Support(DIACAP) YX30	TBD/TBD	General Dynamic IT VA	2.430	1.264	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance MDA CERT YX30	C/CPAF	Northrop Grumman VA	5.068	2.721	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance DIACAP Product YX30	C/CPAF	ASD AL	3.096	0.786	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance Compliance Verification Contract Support Services YX30	TBD/TBD	General Dynamics IT VA	1.561	2.059	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Enterprise Information Assurance Enterprise Network Op Security Center/TRD Mgt YX30	C/CPAF	Northrop Grumman CO	13.060	6.590	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance PKI/CAC Support YX30	C/CPAF	FEDSIM/SRA VA	0.413	0.240	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance NetOps/ CERT Analysis YX30	C/CPFF	Booz Allen Hamilton CO	1.694	0.240		0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance ENOSC Contract Support Services Support YX30	C/CPAF	JTAAS CO	0.913	0.437	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance DEERS/ RAPIDS YX30	TBD/TBD	WHS -	0.194	0.043	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance ENOSC/ CERT Contract Support Services YX30	TBD/TBD	General Dynamics IT VA	0.000	0.422	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance COMSEC Equip/Labor YX30	TBD/TBD	ASD AL	0.806	0.315	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance IA Workforce	TBD/TBD	General Dynamics IT VA	2.903	0.529		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Improvement Training YX30													
Enterprise Information Assurance IA KB Contract Support Services YX30	C/CPAF	General Dynamics IT VA	1.030	0.529	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance Arcsight/SW Licenses YX30	C/CPAF	FEDSIM/SRA VA	0.177	1.270	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance DIACAP Certification & Accreditation BMDS Documentation YX30	C/CPAF	Northrop Grumman VA	1.169	0.583	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance Identify Protection Support YX30	C/CPAF	WHS VA	0.000	0.170	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance IAVA/ANOSC YX30	C/CPAF	ASD AL	1.260	1.310	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance MDA CERT Support YX30	C/CPAF	ASD AL	0.000	1.266	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Enterprise Information Assurance ENOSC HW Maintenance YX30	C/CPAF	Northrop Grumman CO	0.000	1.060	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	C/CPAF	FEDSIM/SRA	5.104	0.335	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</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			
Architecture and Implementation Engineering Enterprise Architecture & Engineering-1 YX30		VA											
Architecture and Implementation Engineering Contract Support Services YX30	C/CPFF	General Dynamics IT VA	1.931	1.792	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Architecture and Implementation Engineering Enterprise Architecture & Engineering-2 YX30	C/CPAF	ASD HSV	0.760	1.703	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Architecture and Implementation Engineering Enterprise Architecture & Engineering-3 YX30	C/CPAF	NG VA	3.460	2.138		0.000		0.000		0.000	Continuing	Continuing	Continuing
Architecture and Implementation Engineering Enterprise Architecture & Engineering-4 YX30	C/CPAF	JTAAS CO	0.531	0.218		0.000		0.000		0.000	Continuing	Continuing	Continuing
Architecture and Implementation Engineering Enterprise	C/CPAF	BAH CO	0.320	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</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			
Architecture & Engineering-5 YX30													
Service Information Management/Information Technology for Executing Agents Service IM/IT YX30	C/CPAF	SMDC/SAIC AL	6.700	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			203.922	105.536		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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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	
Project Cost Totals	203.922	105.536		0.000		0.000		0.000				

Remarks

NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Prepare MDA IT transition/decommission plans	■	■	■	■																								
Finalize MDA IT transition/decommission plans					■	■	■	■																				
Update/sustain PKI/CAC infrastructure FY 2009	■	■	■	■																								
Update/sustain PKI/CAC infrastructure FY 2010					■	■	■	■																				
Certify Information Assurance workforce FY 2009	■	■	■	■																								
Certify Information Assurance workforce FY 2010					■	■	■	■																				
Sustain certified workforce FY09	■	■	■	■																								
Sustain certified workforce FY10					■	■	■	■																				
Implement Phased Disaster Recovery Capability	■	■	■	■																								
Implement Network Operations and Security Centers	■	■	■	■																								
Maintain Network Operations and Security Centers					■	■	■	■																				
Sustain operations of the MDA Computer Emergency Response Team (CERT) FY 2009	■	■	■	■																								
					■	■	■	■																				

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain operations of the MDA Computer Emergency Response Team (CERT) FY 2010																												
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of the MDA Portal-1Q2009-4Q2009	■	■	■	■																								
Sustain 8 hours a day, 5 days a week Operational support of the MDA Portal-1Q2010-4Q2010					■	■	■	■																				
Implement Business Applications FY 2009	■	■	■	■																								
Implement Business Applications FY 2010					■	■	■	■																				
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USSOUTH	■	■	■	■																								
Sustain 8 hours a day, 5 days a week Operational support of IM/IT infrastructure USSOUTH					■	■	■	■																				
Sustain Visual Information Production Center (VIPIC) operations FY 2009	■	■	■	■																								
Sustain Visual Information Production Center (VIPIC) operations FY 2010					■	■	■	■																				
Sustain 24 hours a day, 7 days a week, 365 days a year Network Operations and Security Center	■	■	■	■																								
					■	■	■	■																				

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain 8 hours a day, 7 days a week, 356 days a year Network Operations Security Center																												
Funded Recurring Licenses	■	■	■	■																								
Fund Recurring Licenses					■	■	■	■																				
Submit Qtly PMA/E-Gov scorecard	■	■	■	■																								
Sustain O&M of IM/IT for MDA Research support	■	■	■	■																								
Sustain MDA VTC Operations FY 2009	■	■	■	■																								
Sustain MDA VTC Operations FY 2010					■	■	■	■																				
Provide guidance for the implementation of Information Assurance controls and follow-on sustainment	■	■	■	■																								
Sustain Information Assurance controls					■	■	■	■																				
Implement and sustain secure wireless network	■	■	■	■																								
Sustain secure wireless network					■	■	■	■																				
Design/upgrade Architecture and Plans	■	■	■	■																								
Maintain Architecture and Plans					■	■	■	■																				
Implement DoD-mandated improvements	■	■	■	■																								
Implement phased Electronic Records Mgmt	■	■	■	■																								
Maintain Electronic Records Mgmt					■	■	■	■																				

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Develop and maintain agency IT budgets and monitor execution FY 2009	■	■	■	■																								
Develop and maintain agency IT budgets and monitor execution FY 2010					■	■	■	■																				
Plan server/helpdesk consolidation	■	■	■	■																								
Continue plan and implement server/helpdesk consolidation					■	■	■	■																				
Develop plans to transition comms networks	■	■	■	■																								
Continue to transition comms networks					■	■	■	■																				
Develop and maintain strategic IT plans and policies FY 2009	■	■	■	■																								
Develop and maintain strategic IT plans and policies FY 2010					■	■	■	■																				
Sustain Agency General Services Comms FY 2009	■	■	■	■																								
Sustain Agency General Services Comms FY 2010					■	■	■	■																				
Fund Recurring IT Infrastructure Hardware/ Software Maintenance FY 2009	■	■	■	■																								
Fund Recurring IT Infrastructure Hardware/ Software Maintenance FY 2010					■	■	■	■																				
	■	■	■	■																								

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USNCR																												
Sustain 8 hours a day, 5 days a week operational support of IM/IT infrastructure USNCR					■	■	■	■																				
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USNCR Dahlgren	■	■	■	■																								
Sustain 8 hours a day, 5 days a week Operational support of IM/IT infrastructure US Dahlgren					■	■	■	■																				
Monitor Networks and Configuration Interfaces FY 2009	■	■	■	■																								
Monitor Networks and Configuration Interfaces FY 2010					■	■	■	■																				
Implement Agency-wide Collaborative Environment	■	■	■	■																								
Sustain Agency-wide Collaborative Environment					■	■	■	■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Prepare MDA IT transition/decommission plans	1	2009	4	2009
Finalize MDA IT transition/decommission plans	1	2010	4	2010
Update/sustain PKI/CAC infrastructure FY 2009	1	2009	4	2009
Update/sustain PKI/CAC infrastructure FY 2010	1	2010	4	2010
Certify Information Assurance workforce FY 2009	1	2009	4	2009
Certify Information Assurance workforce FY 2010	1	2010	4	2010
Sustain certified workforce FY09	1	2009	4	2009
Sustain certified workforce FY10	1	2010	4	2010
Implement Phased Disaster Recovery Capability	1	2009	4	2009
Implement Network Operations and Security Centers	1	2009	4	2009
Maintain Network Operations and Security Centers	1	2010	4	2010
Sustain operations of the MDA Computer Emergency Response Team (CERT) FY 2009	1	2009	4	2009
Sustain operations of the MDA Computer Emergency Response Team (CERT) FY 2010	1	2010	4	2010
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of the MDA Portal-1Q2009-4Q2009	1	2009	4	2009
Sustain 8 hours a day, 5 days a week Operational support of the MDA Portal-1Q2010-4Q2010	1	2010	4	2010
Implement Business Applications FY 2009	1	2009	4	2009
Implement Business Applications FY 2010	1	2010	4	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

Event	Start		End	
	Quarter	Year	Quarter	Year
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USSOUTH	1	2009	4	2009
Sustain 8 hours a day, 5 days a week Operational support of IM/IT infrastructure USSOUTH	1	2010	4	2010
Sustain Visual Information Production Center (VIPIC) operations FY 2009	1	2009	4	2009
Sustain Visual Information Production Center (VIPIC) operations FY 2010	1	2010	4	2010
Sustain 24 hours a day, 7 days a week, 365 days a year Network Operations and Security Center	1	2009	4	2009
Sustain 8 hours a day, 7 days a week, 356 days a year Network Operations Security Center	1	2010	4	2010
Funded Recurring Licenses	1	2009	4	2009
Fund Recurring Licenses	1	2010	4	2010
Submit Qtly PMA/E-Gov scorecard	1	2009	4	2009
Sustain O&M of IM/IT for MDA Research support	1	2009	4	2009
Sustain MDA VTC Operations FY 2009	1	2009	4	2009
Sustain MDA VTC Operations FY 2010	1	2010	4	2010
Provide guidance for the implementation of Information Assurance controls and follow-on sustainment	1	2009	4	2009
Sustain Information Assurance controls	1	2010	4	2010
Implement and sustain secure wireless network	1	2009	4	2009
Sustain secure wireless network	1	2010	4	2010
Design/upgrade Architecture and Plans	1	2009	4	2009

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency **DATE:** February 2010

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Event	Start		End	
	Quarter	Year	Quarter	Year
Maintain Architecture and Plans	1	2010	4	2010
Implement DoD-mandated improvements	1	2009	4	2009
Implement phased Electronic Records Mgmt	1	2009	4	2009
Maintain Electronic Records Mgmt	1	2010	4	2010
Develop and maintain agency IT budgets and monitor execution FY 2009	1	2009	4	2009
Develop and maintain agency IT budgets and monitor execution FY 2010	1	2010	4	2010
Plan server/helpdesk consolidation	1	2009	4	2009
Continue plan and implement server/helpdesk consolidation	1	2010	4	2010
Develop plans to transition comms networks	1	2009	4	2009
Continue to transition comms networks	1	2010	4	2010
Develop and maintain strategic IT plans and policies FY 2009	1	2009	4	2009
Develop and maintain strategic IT plans and policies FY 2010	1	2010	4	2010
Sustain Agency General Services Comms FY 2009	1	2009	4	2009
Sustain Agency General Services Comms FY 2010	1	2010	4	2010
Fund Recurring IT Infrastructure Hardware/Software Maintenance FY 2009	1	2009	4	2009
Fund Recurring IT Infrastructure Hardware/Software Maintenance FY 2010	1	2010	4	2010
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USNCR	1	2009	4	2009
Sustain 8 hours a day, 5 days a week operational support of IM/IT infrastructure USNCR	1	2010	4	2010
	1	2009	4	2009

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX30: <i>BMD Information Management Systems</i>

Event	Start		End	
	Quarter	Year	Quarter	Year
Sustain 24 hours a day, 7 days a week, 365 days a year Operational support of IM/IT infrastructure USNCR Dahlgren				
Sustain 8 hours a day, 5 days a week Operational support of IM/IT infrastructure US Dahlgren	1	2010	4	2010
Monitor Networks and Configuration Interfaces FY 2009	1	2009	4	2009
Monitor Networks and Configuration Interfaces FY 2010	1	2010	4	2010
Implement Agency-wide Collaborative Environment	1	2009	4	2009
Sustain Agency-wide Collaborative Environment	1	2010	4	2010

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

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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
MD30: <i>BMD Information Management Systems</i>	0.000	0.000	111.829	0.000	111.829	92.926	94.821	94.132	93.315	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

For FY 2011, increased support funding is added for Information Technology (IT) infrastructure build-out at Headquarters Command Center (HQCC)/ Ft. Belvoir and Von Braun III/Huntsville, Alabama for redundant telecommunications to comply with disaster recovery, simultaneous IT operations/parallel infrastructure, and facility decommissioning.

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project YX30 for FY 2009-FY 2010 is now captured in Project MD30.

A. Mission Description and Budget Item Justification

The Ballistic Missile Defense (BMD) Information Management Systems Project funds the Information Technology (IT) and telecommunications infrastructure of the Agency. The IT and telecommunications infrastructure is critical to the day-to-day functions of the MDA Director and MDA senior leaders to communicate (classified and unclassified) with Congress, senior DoD and other U.S. government agency personnel, Combatant Commanders, North Atlantic Treaty Organization (NATO) partners, and other industry partners. Communication among these organizations facilitates the MDA mission to continue as one of developing and fielding an integrated Ballistic Missile Defense System (BMDS) to defend the United States, our deployed forces, allies and friends against all ranges of enemy ballistic missiles in all phases of flight. The MDA IT infrastructure and telecommunication capabilities support rigorous missile defense testing and facilitates the development of technologies to hedge against future missile threat growth. Communications are vital for missile defense to continue a viable homeland defense against rogue threats and to provide the integration required to defend deployed forces, allies, and friends against theater threats. The IT and telecommunications infrastructure consists of MDA secure information technology systems, data centers, operations and monitoring centers which are vital to support the strategic mission of the Agency and necessary to meet disaster recovery and continuity of operations requirements. The IT and telecommunications infrastructure is required to sustain access to the Secret Internet Protocol Router Network (SIPRNET), Nonsecure Internet Protocol Router Network (NIPRNET), MDA classified and unclassified networks, classified and unclassified video teleconferencing services, test and business knowledge data centers, the Defense Research Engineering Network (DREN), and the Joint Worldwide Intelligence Communication System (JWICS). JWICS is essential to the MDA to obtain and provide intelligence data used to feed the Command, Control, Battle Management and Communication project, the Countermeasures/Counter-Countermeasures projects, and Modeling and Simulation projects. The above initiatives

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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<p>will provide for the efficient operation and safeguarding of all agency information. This project also funds Information Management/Information Technology operations for multiple systems in existing as well as facilities at Dahlgren, Virginia and during the MDA transition to Huntsville, Alabama and Alexandria, Virginia.</p> <p>To support the Director`s intent to significantly improve all layers of our Ballistic Missile Defense System (BMDS), this project funds IT initiatives that include:</p> <p>Operational support to provide critical day-to-day quality of service IT support to the Agency mission Information Technology enterprise architecture that is compliant with DoD and Federally mandated standards for the business and mission support activities of the MDA Business Transformation Agency efforts to provide DoD approved solutions for information sharing, electronic records management, financial management, and decision support systems to achieve more effective, efficient and secure business and mission support activities throughout MDA Knowledge center integration and universal access for information sharing capabilities Consolidated information technology infrastructure in support of information technology line of business goals/objectives Information assurance controls and computer network defense of MDA networks infrastructure for disaster recovery and continuity of operations capabilities Certification and accreditation processes that support the BMDS, test assets, and administrative support networks Information technology policies, guidance, planning, oversight, and monitoring to ensure continued compliance with DoD mandated initiatives, statutes, regulations, directives, and policies</p> <p>The BMD Information Management Systems project MD30 includes the following IT initiatives:</p> <p>General IT Services</p> <p>This initiative consists of IT support services required to operate and maintain the classified and unclassified local area networks in the National Capital Region including the Aegis Program Office at Dahlgren, Virginia; the Huntsville, Alabama region; the Colorado Springs, Colorado region; Kirtland Air Force Base, New Mexico and Edwards Air Force Base, California. This includes operations and maintenance of hardware, software, and help desk services in support of BMDS mission, research and test efforts as well as MDA business processes. Funding also supports coordination with the MDA Enterprise Network Operations Security Center (ENOSC) to implement Information Assurance Vulnerability Assessments (IAVA) issued by the Joint Task Force-Global Network Operations (JTF-GNO). This initiative also funds planning, programming, budget and execution support and Federal and DoD IT compliance reporting. The higher funding in FY 2011 supports new facilities activation in Huntsville, Alabama; Dahlgren, Virginia; and Fort Belvoir, Virginia.</p>		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>
<p>Knowledge and Information Management</p> <p>In accordance with the Clinger Cohen Act and DoD directives, this initiative provides for the licensing and sustainment of DoD approved enterprise information applications. This also provides management and storage of both the unclassified and classified MDA data to share information and knowledge throughout the Missile Defense community. Examples of DoD mandated and mission essential applications include BMD Asset Management System, BMDS Integrated Master Schedule, Electronic Records Management System, Electronic Tasking (E-Tasker), Integrated Acquisition Environment, data management tool, financial management tools, personnel tracking system, MDA Identify and Management Infrastructure application, Computer-Aided Facilities Management, the MDA Corporate University Enterprise (web-based learning management system), the Program Resource Internet Database Environment (PRIDE), and the MDA Standard Procurement System (SPS). This initiative also supports the operations and maintenance of the Visual Information Production Centers, state of-the-art, high capacity graphic and video production services for senior leadership and agency employees.</p> <p>Unified Communications</p> <p>This initiative supports leased communications, telecommunications, management, engineering, systems integration, operations, maintenance and technical support services. These services are provided at MDA locations including the National Capital Region; Huntsville, Alabama; Colorado Springs, Colorado and interceptor sites at Fort Greely, Alaska, Kirtland Air Force Base, New Mexico and Vandenberg Air Force Base, California. This includes classified and unclassified voice and data circuits, access to the Joint Worldwide Intelligence Communications System (JWICS), video teleconferencing and sustainment of Video Over Internet Protocol (VoIP) capability to enhance resolution and reduce per-minute unit costs. Circuits and associated services are provided by the Defense Information Systems Agency (DISA) as well as the Defense Research and Engineering Network (DREN). These circuits provide access to over 80 government and industry partner locations to enable information sharing of BMD-related data throughout the global MDA Enterprise.</p> <p>Information Assurance</p> <p>This initiative supports the Federal Information Security Management Act (FISMA) and is a key priority of the MDA Director. This vital program of the BMDS and MDA Enterprise consists of information assurance, computer network defense, network situational awareness, and certification and accreditation activities to comply with</p>		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>
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DoD information assurance directives, instructions and guidelines. Additionally, the information assurance program integrates human capital management initiatives to sustain and improve the continuity of workforce operations by providing information assurance workforce training and certification. The information assurance program provides system security engineering, development, and testing to ensure that command, control, communications, and computing systems are protected against malicious or accidental attacks and supports the transfer of missile defense capabilities between MDA and the Services. The MDA information assurance program provides the network security operations center and supporting processes to protect and defend MDA knowledge stores and information systems against cyber warfare. The MDA Enterprise Network Operations Security Center manages network situational awareness and status reporting. The MDA Computer Emergency Response Team (CERT) coordinates with the Joint Task Force-Global Network Operations (JTF-GNO) to identify and implement network vulnerability updates. This ensures the availability, integrity, authentication, confidentiality and non-repudiation of the MDA mission, test and administrative systems.

IT Consumables/Sustainment Engineering

This initiative provides project planning, engineering efforts, and IT consumables and equipment to sustain a quality of service for MDA general IT services and business systems to ensure compliance with Federal and DoD enterprise standards. Planning efforts ensure that the policies and budget are in place to support the BMDS mission and to comply with statutory and DoD policies including: Clinger-Cohen Act, the Federal Information Security Management Act, and Office of Management and Budget (OMB) IT budget reporting policies. Engineering efforts are essential to ensure the continuity of IT services necessary for the design, development, modeling, and testing of the BMDS. IT consumables consists of critical equipment sparing and test equipment necessary to sustain the general IT services to facilitate critical repairs within a 24 hour period. IT consumables also consist of items that require periodic replacement such as toner, keyboards, monitors, cabling, etc.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
General IT Services See Description Below <i>FY 2009 Accomplishments:</i> See Project YX30	0.000	0.000	31.621	0.000	31.621

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> See Project YX30</p> <p><i>FY 2011 Base Plans:</i></p> <ul style="list-style-type: none"> -Sustain quality of services 8 hours a day, 5 days a week for administrative and business information systems -Implement information assurance vulnerability assessment control improvements in accordance with established Plan of Action and Milestones -Monitor networks for user compliance with DoD policies, and report incidents -Fund hardware and software licenses for IT operational systems -Test and implement software application upgrades -Maintain the network and help desk services -Provide planning, budgeting, and management oversight of IT projects -Provide web-based training to MDA users on new applications and upgrade -Monitor networks for user compliance with DoD policies and reported incidents -Maintain MDA IT system interface configuration control and asset management -Support transition operations during activation of new facilities <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Knowledge and Information Management</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> See Project YX30</p>		0.000	0.000	28.983	0.000	28.983

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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 2010 Plans:</i> See Project YX30</p> <p><i>FY 2011 Base Plans:</i> -Manage DoD mandated business applications and sustain MDA financial and contractual support systems -Manage software assessment program and conduct reviews of proposed software applications for DoD compliance -Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool -Conduct privacy impact surveys and support compliance reporting -Manage MDA web-based training programs for information assurance, business applications, workforce certification, security, and ethics -Sustain quality of services ;for MDA Knowledge Online -Sustain recurring operations and maintenance of graphic and video production capabilities</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Unified Communications See Description Below</p> <p><i>FY 2009 Accomplishments:</i> See Project YX30</p> <p><i>FY 2010 Plans:</i> See Project YX30</p>		0.000	0.000	20.398	0.000	20.398

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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 2011 Base Plans:</i></p> <ul style="list-style-type: none"> -Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise network and telecommunications equipment -Operate, monitor, and sustain recurring classified and unclassified telecommunications equipment to comply with DoD policies and Global Information Grid architecture plan -Operate, monitor, and sustain recurring classified and unclassified wireless services -Operate, monitor, and sustain recurring operations for agency wide video teleconference rooms and equipment -Provide and implement engineering solutions for all unified communication services <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Information Assurance</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> See Project YX30</p> <p><i>FY 2010 Plans:</i> See Project YX30</p> <p><i>FY 2011 Base Plans:</i></p> <ul style="list-style-type: none"> -Fund recurring hardware maintenance and software licenses for IA monitoring systems -Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis -Collect, analyze, and report vulnerability and cyber warfare attack metrics to the MDA CIO, MDA leadership, and JTF-GNO 		0.000	0.000	18.780	0.000	18.780

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<ul style="list-style-type: none"> - Revise and update Information Assurance certification packages for administrative and business information technology systems reported to DoD and OMB -Ensure MDA mission, test, and administrative systems are operated securely in accordance with DoD Information Assurance Certification and Accreditation policies ; ; -Manage the Information Assurance Workforce Improvement Program to certify CIO Information Assurance professionals and reported compliance in accordance with Federal Information Security Management Act (FISMA) and DoDM 8570.1, achieving the DoD certification goal -Complete annual Information Assurance user training for the MDA workforce -Provide Information Assurance engineering and planning guidance and vulnerability assessment for all MDA Information Technology acquisition programs <p><i>FY 2011 OCO Plans:</i> NA</p>						
IT Consumables/Sustainment Engineering See Description Below <i>FY 2009 Accomplishments:</i> See Project YX30 <i>FY 2010 Plans:</i> See Project YX30 <i>FY 2011 Base Plans:</i> <ul style="list-style-type: none"> -Sustain quality of services ;across the MDA Enterprise and maintain critical spares inventory -Architect and develop plans to repair general IT service and business systems -Perform analysis, track, and report metrics on equipment lifecycle and average time to repair -Plan, engineer and implement sustainment projects for general IT service and business systems 		0.000	0.000	12.047	0.000	12.047

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
-Revise and test contingency plans for IT systems across the MDA enterprise -Procure, receive, inventory, and manage IT consumables and equipment <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	111.829	0.000	111.829

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
• 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
• 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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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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>
• 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
• 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

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

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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
General IT Services IT Operations & Maintenance (O&M) Support (HSV) MD30	C/CPAF	Northrop Grumman-ASD AL	0.000	0.000		10.814	Oct 2010	0.000		10.814	Continuing	Continuing	Continuing
General IT Services Portfolio Management MD30	C/CPAF	ASD/BAH AL/CO	0.000	0.000		0.967	Oct 2010	0.000		0.967	Continuing	Continuing	Continuing
General IT Services Contract Support Services for General IT Support MD30	TBD/TBD	General Dynamics AL/VA/CO	0.000	0.000		5.841	Oct 2010	0.000		5.841	Continuing	Continuing	Continuing
General IT Services IT O&M Support (NCR) MD30	C/CPAF	Northrop Grumman VA	0.000	0.000		10.248	Oct 2010	0.000		10.248	Continuing	Continuing	Continuing
	C/CPAF		0.000	0.000		0.806	Oct 2010	0.000		0.806	Continuing	Continuing	Continuing

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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			
General IT Services Customer Relations MD30		Northrop Grumman/ASD AL											
General IT Services Travel MD30	Various/ Various	Various Various	0.000	0.000		0.396	Jul 2011	0.000		0.396	Continuing	Continuing	Continuing
General IT Services Hardware/Software Licenses MD30	Various/ Various	Various Various	0.000	0.000		2.549	Jul 2011	0.000		2.549	Continuing	Continuing	Continuing
Knowledge and Information Management MDA Portal MD30	C/CPAF	PHACIL VA	0.000	0.000		6.617	Oct 2010	0.000		6.617	Continuing	Continuing	Continuing
Knowledge and Information Management Contract Support Services Know Mgt Support MD30	TBD/TBD	General Dynamics VA	0.000	0.000		1.068	Oct 2010	0.000		1.068	Continuing	Continuing	Continuing
Knowledge and Information Management Standard Procurement Systems Support MD30	TBD/TBD	SPS JP MO VA	0.000	0.000		0.347	Jan 2011	0.000		0.347	Continuing	Continuing	Continuing
Knowledge and Information Management PRIDE MD30	TBD/TBD	CIMS/CAMBER AL	0.000	0.000		0.995	Jan 2011	0.000		0.995	Continuing	Continuing	Continuing
Knowledge and Information Management Classified MKO MD30	C/CPAF	Northrop Grumman VA	0.000	0.000		0.788	Jan 2011	0.000		0.788	Continuing	Continuing	Continuing
	C/CPAF	ASD	0.000	0.000		0.322	Oct 2010	0.000		0.322	Continuing	Continuing	Continuing

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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			
Knowledge and Information Management Business Innovation MD30		AL											
Knowledge and Information Management Licenses Support MD30	C/CPAF	Northrop Grumman VA	0.000	0.000		14.606	Oct 2010	0.000		14.606	Continuing	Continuing	Continuing
Knowledge and Information Management Visual Information Production Center MD30	SS/CPFF	CSC VA	0.000	0.000		4.240	Oct 2010	0.000		4.240	Continuing	Continuing	Continuing
Unified Communications Leased Communications - DISA MD30	TBD/TBD	DISA IL	0.000	0.000		1.612	Apr 2011	0.000		1.612	Continuing	Continuing	Continuing
Unified Communications Leased Communications - DREN MD30	TBD/TBD	DREN MD	0.000	0.000		3.322	Apr 2011	0.000		3.322	Continuing	Continuing	Continuing
Unified Communications Communications-JWICS MD30	C/CPAF	Northrop Grumman VA	0.000	0.000		0.129	Jul 2011	0.000		0.129	Continuing	Continuing	Continuing
Unified Communications WAN Engineering Sustainment MD30	C/CPAF	Northrop Grumman CO	0.000	0.000		0.985	Jan 2011	0.000		0.985	Continuing	Continuing	Continuing
Unified Communications Leased Telecom Wireless/Local MD30	C/Various	Various AL	0.000	0.000		2.884	Jul 2011	0.000		2.884	Continuing	Continuing	Continuing
	TBD/TBD	Army	0.000	0.000		0.742	Jul 2011	0.000		0.742	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>					PROJECT MD30: <i>BMD Information Management Systems</i>				

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			
Unified Communications Army DOIM MD30		AL											
Unified Communications Leased Communications - Sonet Ring MD30	TBD/TBD	DTSW VA	0.000	0.000		0.080		0.000		0.080	Continuing	Continuing	Continuing
Unified Communications PBX/Infostructure Support MD30	C/CPAF	Northrop Grumman-ASD AL/CO	0.000	0.000		0.433	Oct 2010	0.000		0.433	Continuing	Continuing	Continuing
Unified Communications Contract Support Services for Unified Communications Support MD30	TBD/TBD	General Dynamics AL	0.000	0.000		1.440	Oct 2010	0.000		1.440	Continuing	Continuing	Continuing
Unified Communications VTC Support and Maintenance MD30	C/CPAF	Microtech VA/AL	0.000	0.000		8.771	Oct 2010	0.000		8.771	Continuing	Continuing	Continuing
Information Assurance MDA Information Assurance Certification MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		2.257	Oct 2010	0.000		2.257	Continuing	Continuing	Continuing
Information Assurance Contract Support Services for IA Support MD30	TBD/TBD	General Dynamics VA	0.000	0.000		4.647	Oct 2010	0.000		4.647	Continuing	Continuing	Continuing
Information Assurance DIACAP Certification/	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		1.397	Jul 2011	0.000		1.397	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>					PROJECT MD30: <i>BMD Information Management Systems</i>				

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			
Accreditation Support MD30													
Information Assurance DEERS/RAPID/Active Client/Card Support MD30	TBD/TBD	Various Various	0.000	0.000		0.083	Jul 2011	0.000		0.083	Continuing	Continuing	Continuing
Information Assurance Identify Protection Support MD30	C/CPAF	WHS VA	0.000	0.000		0.172	Jul 2011	0.000		0.172	Continuing	Continuing	Continuing
Information Assurance COMSEC MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		0.667	Jul 2011	0.000		0.667	Continuing	Continuing	Continuing
Information Assurance IAVA ANOSC Support MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		1.612	Oct 2010	0.000		1.612	Continuing	Continuing	Continuing
Information Assurance ENOSC HW/SW Main MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		1.292	Jul 2011	0.000		1.292	Continuing	Continuing	Continuing
Information Assurance ENOSC Security/TRD Mgt MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		6.653	Oct 2010	0.000		6.653	Continuing	Continuing	Continuing
IT Consumables/ Sustainment Engineering Architectural Engineering MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		1.110	Oct 2010	0.000		1.110	Continuing	Continuing	Continuing
	C/CPAF		0.000	0.000		2.741	Oct 2010	0.000		2.741	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</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			
IT Consumables/ Sustainment Engineering Implementation Engineering MD30		Northrop Grumman-ASD AL/VA											
IT Consumables/ Sustainment Engineering IT Consumables MD30	C/CPAF	Northrop Grumman-ASD AL/VA	0.000	0.000		5.176	Jul 2011	0.000		5.176	Continuing	Continuing	Continuing
IT Consumables/ Sustainment Engineering Contract Deliver/Compliance Reports/Publications MD30	Various/ Various	Various Various	0.000	0.000		1.648	Jul 2011	0.000		1.648	Continuing	Continuing	Continuing
IT Consumables/ Sustainment Engineering Contract Support Services for Implementation Support MD30	TBD/TBD	General Dynamics VA/AL	0.000	0.000		1.372	Oct 2010	0.000		1.372	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		111.829		0.000		111.829			

Remarks

NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>
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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			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
	0.000	0.000		111.829		0.000		111.829			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems									■	■	■	■																
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY12													■	■	■	■												
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY13																	■	■	■	■								
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY14																					■	■	■	■				
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY15																									■	■	■	■
Implement IAVA control improvements for general IT services									■	■	■	■																
Implement IAVA control improvements for general IT services FY12													■	■	■	■												
Implement IAVA control improvements for general IT services FY13																	■	■	■	■								
Implement IAVA control improvements for general IT services FY14																					■	■	■	■				
																									■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015					
	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		
Implement IAVA control improvements for general IT services FY15																														
Monitor networks for user compliance with DoD policies										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Fund Hardware/Software licenses for IT operational systems										■	■	■	■																	
Fund Hardware/Software licenses for IT operational systems FY12													■	■	■	■														
Fund Hardware/Software licenses for IT operational systems FY13																■	■	■	■											
Fund Hardware/Software licenses for IT operational systems FY14																			■	■	■	■								
Fund Hardware/Software licenses for IT operational systems FY15																										■	■	■	■	
Test and implement software application upgrades for general IT services										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Maintain network and helpdesk services for general IT services										■	■	■	■																	
Maintain network and helpdesk services for general IT services FY12													■	■	■	■														
Maintain network and helpdesk services for general IT services FY13																		■	■	■	■									
																											■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015					
	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		
Maintain network and helpdesk services for general IT services FY14																														
Maintain network and helpdesk services for general IT services FY15																											■	■	■	■
Provide planning, budgeting, and management oversight of IT projects									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Provide web-based training to MDA users									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise									■	■	■	■																		
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY12												■	■	■	■															
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY13															■	■	■	■												
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY14																			■	■	■	■								
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY15																											■	■	■	■
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms									■	■	■	■																		

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY12													■	■	■	■												
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY13																	■	■	■	■								
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY14																					■	■	■	■				
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY15																									■	■	■	■
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms									■	■	■	■																
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY12													■	■	■	■												
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY13																	■	■	■	■								
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY14																					■	■	■	■				
																									■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY15																												
Provide engineering solutions for all Unified Comms Services								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Manage DOD mandated business applications and sustain MDA financial and contractual support systems								■	■	■	■																	
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY12												■	■	■	■													
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY13															■	■	■	■										
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY14																				■	■	■	■					
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY15																								■	■	■	■	
Manage software assessment programs and conduct reviews for DoD compliance								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool								■	■	■	■																	

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY12													■	■	■	■												
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY13																	■	■	■	■								
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY14																					■	■	■	■				
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY15																									■	■	■	■
Manage MDA web-based training programs for IA, business applications, security, and ethics									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Operate and maintain MDA Knowledge Online Services									■	■	■	■																
Operate and maintain MDA Knowledge Online Services FY12													■	■	■	■												
Operate and maintain MDA Knowledge Online Services FY13																	■	■	■	■								
Operate and maintain MDA Knowledge Online Services FY14																					■	■	■	■				
Operate and maintain MDA Knowledge Online Services FY15																									■	■	■	■
Sustain recurring operations and maintenance of graphics and video production capabilities for Knowledge and Info Mgt									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance									■	■	■	■																
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY12													■	■	■	■												
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY13																	■	■	■	■								
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY14																					■	■	■	■				
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY15																									■	■	■	■
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance									■	■	■	■																
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY12													■	■	■	■												
Monitor and defend mission, test, and administrative information systems on an																	■	■	■	■								

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency		DATE: February 2010
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015						
	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			
8 hours a day, 5 days a week basis for Information Assurance FY13																															
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY14																					■	■	■	■							
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY15																											■	■	■	■	
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO											■	■	■	■																	
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY12														■	■	■	■														
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY13																	■	■	■	■											
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY14																					■	■	■	■							
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY15																												■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Conduct IA certification evaluation of mission, test, and administrative systems									■	■	■	■																
Conduct IA certification evaluation of mission, test, and administrative systems FY12													■	■	■	■												
Conduct IA certification evaluation of mission, test, and administrative systems FY13																	■	■	■	■								
Conduct IA certification evaluation of mission, test, and administrative systems FY14																					■	■	■	■				
Conduct IA certification evaluation of mission, test, and administrative systems FY15																									■	■	■	■
Maintain Information Assurance certification packages for test, admin, and business information technology systems									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Complete Annual IA user training for MDA workforce									■	■	■	■																
Complete Annual IA user training for MDA workforce FY12													■	■	■	■												
Complete Annual IA user training for MDA workforce FY13																	■	■	■	■								
Complete Annual IA user training for MDA workforce FY14																					■	■	■	■				
Complete Annual IA user training for MDA workforce FY15																									■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs									■	■	■	■																
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY12													■	■	■	■												
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY13																	■	■	■	■								
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY14																					■	■	■	■				
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY15																									■	■	■	■
Manage the IA Workforce Improvement Program to certify CIO IA professionals									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Sustain the IT infrastructure across the MDA Enterprise									■	■	■	■																
Sustain the IT infrastructure across the MDA Enterprise FY12													■	■	■	■												
Sustain the IT infrastructure across the MDA Enterprise FY13																	■	■	■	■								
																					■	■	■	■				

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Sustain the IT infrastructure across the MDA Enterprise FY14																												
Sustain the IT infrastructure across the MDA Enterprise FY15																												
Architect and develop plans to repair general It service and business systems																												
Perform analysis, track, and report metrics on equipment lifecycle																												
Perform analysis, track, and report metrics on equipment lifecycle FY12																												
Perform analysis, track, and report metrics on equipment lifecycle FY13																												
Perform analysis, track, and report metrics on equipment lifecycle FY14																												
Perform analysis, track, and report metrics on equipment lifecycle FY15																												
Plan, engineer, and implement sustainment projects for general IT services and business systems																												
Revise and test contingency plans for IT systems																												
Revise and test contingency plans for IT systems FY12																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Missile Defense Agency		DATE: February 2010
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Revise and test contingency plans for IT systems FY13																	■	■	■	■								
Revise and test contingency plans for IT systems FY14																					■	■	■	■				
Revise and test contingency plans for IT systems FY15																									■	■	■	■
Procure, receive, inventory, and manage IT consumables and equipment									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems	1	2011	4	2011
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY12	1	2012	4	2012
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY13	1	2013	4	2013
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY14	1	2014	4	2014
Sustain 8 hours a day, 5 days a week IT operational Support for Admin and Business Information Systems FY15	1	2015	4	2015
Implement IAVA control improvements for general IT services	1	2011	4	2011
Implement IAVA control improvements for general IT services FY12	1	2012	4	2012
Implement IAVA control improvements for general IT services FY13	1	2013	4	2013
Implement IAVA control improvements for general IT services FY14	1	2014	4	2014
Implement IAVA control improvements for general IT services FY15	1	2015	4	2015
Monitor networks for user compliance with DoD policies	1	2011	4	2015
Fund Hardware/Software licenses for IT operational systems	1	2011	4	2011
Fund Hardware/Software licenses for IT operational systems FY12	1	2012	4	2012
Fund Hardware/Software licenses for IT operational systems FY13	1	2013	4	2013
Fund Hardware/Software licenses for IT operational systems FY14	1	2014	4	2014

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

Event	Start		End	
	Quarter	Year	Quarter	Year
Fund Hardware/Software licenses for IT operational systems FY15	1	2015	4	2015
Test and implement software application upgrades for general IT services	1	2011	4	2015
Maintain network and helpdesk services for general IT services	1	2011	4	2011
Maintain network and helpdesk services for general IT services FY12	1	2012	4	2012
Maintain network and helpdesk services for general IT services FY13	1	2013	4	2013
Maintain network and helpdesk services for general IT services FY14	1	2014	4	2014
Maintain network and helpdesk services for general IT services FY15	1	2015	4	2015
Provide planning, budgeting, and management oversight of IT projects	1	2011	4	2015
Provide web-based training to MDA users	1	2011	4	2015
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise	1	2011	4	2011
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY12	1	2012	4	2012
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY13	1	2013	4	2013
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY14	1	2014	4	2014
Fund recurring leased circuits, maintenance agreements and licenses for MDA Enterprise FY15	1	2015	4	2015
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms	1	2011	4	2011
	1	2012	4	2012

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency		DATE: February 2010
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Event	Start		End	
	Quarter	Year	Quarter	Year
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY12				
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY13	1	2013	4	2013
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY14	1	2014	4	2014
Operate, monitor, and sustain recurring classified and unclassified Telecom requirements for Unified Comms FY15	1	2015	4	2015
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms	1	2011	4	2011
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY12	1	2012	4	2012
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY13	1	2013	4	2013
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY14	1	2014	4	2014
Operate, monitor, and sustain recurring operations for Video Teleconferencing for Unified Comms FY15	1	2015	4	2015
Provide engineering solutions for all Unified Comms Services	1	2011	4	2015
Manage DOD mandated business applications and sustain MDA financial and contractual support systems	1	2011	4	2011
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY12	1	2012	4	2012

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency **DATE:** February 2010

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Event	Start		End	
	Quarter	Year	Quarter	Year
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY13	1	2013	4	2013
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY14	1	2014	4	2014
Manage DOD mandated business applications and sustain MDA financial and contractual support systems FY15	1	2015	4	2015
Manage software assessment programs and conduct reviews for DoD compliance	1	2011	4	2015
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool	1	2011	4	2011
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY12	1	2012	4	2012
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY13	1	2013	4	2013
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY14	1	2014	4	2014
Sustain the BMDS Integrated Master Schedule and the BMD Asset Management Tool FY15	1	2015	4	2015
Manage MDA web-based training programs for IA, business applications, security, and ethics	1	2011	4	2015
Operate and maintain MDA Knowledge Online Services	1	2011	4	2011
Operate and maintain MDA Knowledge Online Services FY12	1	2012	4	2012
Operate and maintain MDA Knowledge Online Services FY13	1	2013	4	2013
Operate and maintain MDA Knowledge Online Services FY14	1	2014	4	2014

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD30: <i>BMD Information Management Systems</i>

Event	Start		End	
	Quarter	Year	Quarter	Year
Operate and maintain MDA Knowledge Online Services FY15	1	2015	4	2015
Sustain recurring operations and maintenance of graphics and video production capabilities for Knowledge and Info Mgt	1	2011	4	2015
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance	1	2011	4	2011
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY12	1	2012	4	2012
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY13	1	2013	4	2013
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY14	1	2014	4	2014
Fund Recurring hardware maintenance and software licenses for monitoring systems of Information Assurance FY15	1	2015	4	2015
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance	1	2011	4	2011
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY12	1	2012	4	2012
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY13	1	2013	4	2013
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY14	1	2014	4	2014
Monitor and defend mission, test, and administrative information systems on an 8 hours a day, 5 days a week basis for Information Assurance FY15	1	2015	4	2015

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Event	Start		End	
	Quarter	Year	Quarter	Year
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO	1	2011	4	2011
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY12	1	2012	4	2012
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY13	1	2013	4	2013
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY14	1	2014	4	2014
Report vulnerability and cyber warfare attack metrics to MDA CIO, MDA Leadership, and JTF-GNO FY15	1	2015	4	2015
Conduct IA certification evaluation of mission, test, and administrative systems	1	2011	4	2011
Conduct IA certification evaluation of mission, test, and administrative systems FY12	1	2012	4	2012
Conduct IA certification evaluation of mission, test, and administrative systems FY13	1	2013	4	2013
Conduct IA certification evaluation of mission, test, and administrative systems FY14	1	2014	4	2014
Conduct IA certification evaluation of mission, test, and administrative systems FY15	1	2015	4	2015
Maintain Information Assurance certification packages for test, admin, and business information technology systems	1	2011	4	2015
Complete Annual IA user training for MDA workforce	1	2011	4	2011
Complete Annual IA user training for MDA workforce FY12	1	2012	4	2012
Complete Annual IA user training for MDA workforce FY13	1	2013	4	2013
Complete Annual IA user training for MDA workforce FY14	1	2014	4	2014
Complete Annual IA user training for MDA workforce FY15	1	2015	4	2015

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Event	Start		End	
	Quarter	Year	Quarter	Year
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs	1	2011	4	2011
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY12	1	2012	4	2012
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY13	1	2013	4	2013
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY14	1	2014	4	2014
Provide IA engineering and planning guidance and vulnerability assessment for IT acquisition programs FY15	1	2015	4	2015
Manage the IA Workforce Improvement Program to certify CIO IA professionals	1	2011	4	2015
Sustain the IT infrastructure across the MDA Enterprise	1	2011	4	2011
Sustain the IT infrastructure across the MDA Enterprise FY12	1	2012	4	2012
Sustain the IT infrastructure across the MDA Enterprise FY13	1	2013	4	2013
Sustain the IT infrastructure across the MDA Enterprise FY14	1	2014	4	2014
Sustain the IT infrastructure across the MDA Enterprise FY15	1	2015	4	2015
Architect and develop plans to repair general It service and business systems	1	2011	4	2015
Perform analysis, track, and report metrics on equipment lifecycle	1	2011	4	2011
Perform analysis, track, and report metrics on equipment lifecycle FY12	1	2012	4	2012
Perform analysis, track, and report metrics on equipment lifecycle FY13	1	2013	4	2013
Perform analysis, track, and report metrics on equipment lifecycle FY14	1	2014	4	2014
Perform analysis, track, and report metrics on equipment lifecycle FY15	1	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency		DATE: February 2010
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Event	Start		End	
	Quarter	Year	Quarter	Year
Plan, engineer, and implement sustainment projects for general IT services and business systems	1	2011	4	2015
Revise and test contingency plans for IT systems	1	2011	4	2011
Revise and test contingency plans for IT systems FY12	1	2012	4	2012
Revise and test contingency plans for IT systems FY13	1	2013	4	2013
Revise and test contingency plans for IT systems FY14	1	2014	4	2014
Revise and test contingency plans for IT systems FY15	1	2015	4	2015
Procure, receive, inventory, and manage IT consumables and equipment	1	2011	4	2015

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</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
<i>YX31: Modeling & Simulation</i>	90.523	48.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	138.655
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

While FY2010 M&S funding decreases in the table above, the total M&S Program funding increases in FY10, because M&S funding for Hardware-in-the-Loop and Digital Modeling & Simulation was moved to the Elements to execute Element specific Modeling & Simulation requirements.

A. Mission Description and Budget Item Justification

The mission of the Agency's Modeling and Simulation (M&S) program is to engineer and deliver validated, integrated simulation solutions for the primary uses of BMDS Performance Assessment and Ground Test, with additional capability to support BMDS-Element integration, missile defense wargames & exercises (national and international), BMDS training, and BMDS concept analysis. In this role, M&S provides cost-effective and proactive tools to assess the fielded capabilities of the BMDS, analyze and foster accelerated integration of Element and component capability into the BMDS, and is a valuable training and planning tool for warfighting Concept of Operations and missile defense planning. These M&S attributes enable the BMDS acquisition program to provide warfighting capability in a faster timetable and achieve tighter systems integration. Modeling and Simulation, anchored in ground and flight test program data, is a cornerstone for both developing the BMDS and gaining confidence in its performance, given that large amounts of flight data necessary to otherwise characterize the system is cost prohibitive. Likewise, M&S open architecture and frameworks are developed and implemented to reflect the open architecture characteristic of the Ballistic Missile Defense System. MDA objective 5.3 in the Strategic Intent states: Modeling and Simulation will acquire, develop, manage, direct, and execute high-fidelity models and simulations necessary for building and operating the BMDS. MDA will deemphasize stove-piped modeling efforts and invest in updating overall BMDS simulations and tools for use in ground-testing, wargames, and system level performance assessment. To accomplish this mission, M&S is organized into two product centers and two functional offices. The functional offices are Architecture and Engineering and Verification, Validation and Accreditation (VV&A). The product centers are BMDS Digital Modeling and Simulation, and BMDS Hardware-in-the-loop (HWIL).

SIMULATION, ARCHITECTURE & REQUIREMENTS

Architecture and Requirements (A&R) products include BMDS Event supporting system architectures and the standards and specifications used for BMDS model, simulation, and representation compliance. A&R provides Performance Assessment (PA) Scenario support for BMDS Test campaigns, implements a common Conceptual Model, and enables consistent/common Data Management and stakeholder collaboration.

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<p>VERIFICATION, VALIDATION, AND ACCREDITATION (VV&A)</p> <p>Accredited system-level models and simulations (M&S) anchored to real-world events, are required to perform an accurate and comprehensive assessment of the BMDS. VV&A is responsible for implementing and documenting system-level M&S verification, validation, and accreditation which establish credibility and increases confidence in the M&S that provides a cornerstone for the Agency's simulation-based acquisition approach. The individual MDA elements and components are responsible for conducting the VV&A of their own models and providing that evidence to system-level VV&A for each event. This includes benchmarking their M&S to higher fidelity simulations, anchoring to real world events, and planning and conducting post-flight reconstruction. VV&A annually verifies, validates and, accredits multiple MDA events to include Performance Assessment, Ground Tests that support BMDS fielding decisions, and tier one COCOM exercises. VV&A is responsible for the development and promulgation of system-level VV&A policies and standards, benchmarked against leading industry practices. VV&A provides model, simulation, and event credibility across Performance Assessment, Ground Tests, Element Integration, Wargames and Exercises, Training, and all associated infrastructure that supports BMDS fielding decisions. Through the consistent practice of verifying model representations benchmarked to other higher-fidelity models, and anchored to operational tests, VV&A will continue to increase model confidence and acceptability by outside agencies like the Operational Test Agency. Due to varying architectures and configurations required for different events, VV&A provides strong coordination, thorough analysis, development and use of appropriate tools, identification of metrics, and validation of both digital and hardware in the loop modeling and simulation capability. The implementation of the Model-Test-Model process requires that VV&A maintain close collaboration with the test community, and the capability to predict system-level test results and perform post-flight test reconstruction in order to improve model confidence and future performance. Robust VV&A requires flexibility and capability to explore new BMDS concepts, and evaluate new Element representations to identify and correct flaws early in the development process.</p> <p>BMDS DIGITAL MODELING AND SIMULATION</p> <p>BMDS Digital Modeling and Simulation produces and integrates digital M&S assets for use with the Digital Simulation Architecture to form system-level constructive simulations for full-envelope BMDS performance assessment with surrogate capability for BMDS ground tests. Digital M&S creates system-level stimulus for Element integration testing and system-level M&S capabilities which augment BMDS flight tests. Other mission areas include digital M&S capability for system-level concept definition and exploration; real-time, interactive system-level M&S capability to support warfighter-in-the-loop wargaming, training and exercises, and capabilities to support rapid, flexible scenario development and execution control.</p> <p>BMDS HARDWARE-IN-THE-LOOP (HWIL)</p>		

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BMDS HWIL Modeling and Simulation is responsible to provide and integrate the BMDS system-level HWIL stimulation framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and warfighter needs. BMDS HWIL provides development, integration, and test funding to both MDA and non-MDA Elements participating in the BMDS ground test campaigns. BMDS HWIL also provides the core Lethality and Phenomenology models for use in analysis of BMDS and Element mission requirements. BMDS HWIL additionally maintains the Advanced Research Center and Simulation Center High Performance Computing Capabilities to support test and M&S requirements across MDA.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Simulation Architecture & Requirements See Description Below <i>FY 2009 Accomplishments:</i> Established and execute a rigorous M&S Requirements Engineering Processed, published and enforced a cohesive M&S Systems Engineering processes across the M&S Enterprise Developed and maintained the Mission Space Description document Developed Simulation Framework descriptions Designed Event M&S hardware and software architectures <i>FY 2010 Plans:</i> ;Execute the M&S Requirements Engineering process for Test and fielding ;Enforce cohesive M&S Systems Engineering processes across the enterprise ;Enforce M&S standards to ensure M&S effectiveness and efficiency ;Update Common Environment and Threat Models to include improved trajectory generation, threat signatures generation, core lethality, and battlespace environment definitions ;Develop & maintain Mission Space Description ;Document Simulation Framework descriptions ;Update the M&S Strategic Plan, BMDS Integrated M&S Master Plan ;Event-specific analyses and briefings on appropriate Event milestones to affect planning, engineering and acquisition decisions	7.983	19.885	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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>;Begin a collaborative effort to define and document the BMDS-level conceptual model ;Implement standard approach for Configuration Management process, control and artifacts Baseline configurations, change control documentation, technical evaluations, audit results</p> <p><i>FY 2011 Base Plans:</i> In accordance with the Missile Defense Agency revised budget structure, the content previously planned for FY11 is now captured in Project MD31.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>Verification, Validation & Accreditation See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Continued to provide an integrated validated system-level constructive simulation to support full-envelope BMDS performance assessment Continued to provide an integrated validated ground test M&S capability to support BMDS performance assessment Continued to provide an integrated validated system-level M&S capabilities to augment BMDS flight tests Continued to provide an integrated validated M&S capability to support Element Integration Continued to provide validated M&S capability for wargaming Continued to implement a system-level M&S VV&A capability Continued VV&A for BMDS-level M&S events/venues Continued to accredit Models and Simulations for Core Intended Uses Continued to develop Accreditation Reports Continued to provide Facility/Test support for test events</p>		9.837	3.883	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>Continued to release Accreditation Plans and Final Report Continued to prepare Test Event Assessment Reports</p> <p>Continued to refine M&S Enterprise Verification, Validation, and Accreditation Process</p> <p>Continued to coordinate development and use with partner and coalition organizations</p> <p>Continued to develop and implement M&S standards consistent with industry best practices</p> <p>Continued to develop and collect metrics on system-level M&S</p> <p>Continued to ensure that individual BMDS elements and components are responsible for the verification and validation of their own models</p> <p><i>FY 2010 Plans:</i></p> <p>Continue to provide integrated Verification, Validation, and Accreditation (VVA) of MDA Models and Simulations (M&S) at the system level for specific events, to include Performance Assessment, Ground Tests that support BMDS fielding decisions, and tier one COCOM exercises</p> <p>Continue to develop integrated VV&A event Plans and Reports for each event</p> <p>Continue to work closely with Elements, Test Community, System Engineering, and OTA to ensure M&S for event meets intended uses and objectives, and has proper VV&A documentation and evidence, to include benchmarking/anchoring pedigree</p> <p>Continue to conduct system-level V&V to include threat trajectory and signature V&V throughout the system; end-to-end environmental implementation is consistent and correct; communications and architecture behave properly; and interoperability is adequately addressed</p> <p>Continue to develop and implement M&S standards consistent with industry best practices</p> <p>Continue to conduct annual review of BMDS Element VV&A programs</p> <p>Continue to operate a problem reporting system to capture M&S anomalies and incorporate into requirements process for M&S improvements</p> <p>Continue to lead BMDS VV&A working group to improve VV&A operations and ultimately improve BMDS performance</p> <p>Continue to develop and implement metrics on system-level M&S to increase efficiencies and effectiveness</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Continue to ensure that individual BMDS elements and components are responsible for the proper VV&A of their own models</p> <p><i>FY 2011 Base Plans:</i> In accordance with the Missile Defense Agency revised budget structure, the content previously planned for FY11 is now captured in Project MD31.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Digital Modeling & Simulation</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> Continued Product Line development, sustainment, maintenance and product support for digital simulation:</p> <p>Infrastructure ((Digital Simulation Architecture (DSA), External Modeling Framework (EMF) and Optimistic Modeling Framework (OMF)) Core Extended Air Defense Simulation (EADSIM) Missile Defense Space Warning Tool (models validated space-borne assets of BMDS) Threat Modeling Simulation System BMD International Simulation Continued to design, integrate, deliver and execute the Performance Assessment 09 (PA09) constructive simulation to support full-envelope BMDS performance assessment Continued to integrate the EMF and OMF -compliant models supplied by the Elements Continued to provide the digital simulation infrastructure (architecture, frameworks) to support system-level M&S simulations, warfighter-in-the-loop ability for wargames and exercises, test driver</p>		27.928	7.740	0.000	0.000	0.000

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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></p> <p>Planned, developed, integrated and tested a common BMDS HWIL stimulation framework with the Elements for the GTX-09a, GTI-09, GTD-09 ground tests</p> <p>Conducted BMDS HWIL stimulation framework V&V for BMDS GTX-09a, GTI-09 and GTD-09 ground tests</p> <p>Derived and designed the BMDS HWIL stimulation framework for use in domestic and international BMDS M&S venues</p> <p>Provided funding for Element integration and development testing in support of GTX-09a and GTI-09 ground tests</p> <p>Provided O&M funding for the Advanced Research Center (ARC) in Huntsville, Alabama. The ARC supplies computational resources, infrastructure, and IT subject matter experts who support both system and element-level flight and ground testing</p> <p>Provided O&M funding for the Simulation Center in Huntsville, Alabama. The Sim-Center supplies computational resources and infrastructure for support of MDA distributed High Performance Computing Requirements</p> <p>Provided development, O&M, and IV&V of standardized tools and models to include active and passive signatures of threat objects and their kinematics and operational behaviors, relevant natural and perturbed battlespace environments, and a common way of dealing with the consequences of missile defense engagements</p> <p>Upgraded the BMDS stimulation framework to support wideband debris for BMDS sensors</p> <p>Completed integration of the BMDS stimulation framework with the Israeli Test Bed (ITB) and AN/TPY-2 tactical radar</p> <p>Initially integrated the BMDS stimulation framework with the ARROW HWIL facility in Israel and additional MDA/SN sensors</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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 2010 Plans:</i></p> <ul style="list-style-type: none"> Lease and maintain the ARC and the SSI in Huntsville, Alabama Modify and incrementally upgrade phenomenology and lethality HWIL Products Support for the SPAWAR-Pacific, Tactical Communication Emulation (TCES) Derive and support implementation and verification of the BMDS System Performance V&V to include the core phenomenology and lethality models Develop, integrate, and test a common BMDS HWIL stimulation framework with the Elements for ground tests Conduct BMDS HWIL stimulation framework V&V for BMDS ground tests Define and plan for enhancements to the SSF required for execution of ground test campaign to include identification of interdependencies required for execution Provide development, operations, support, and IV&V of standardized phenomenology and lethality tools and models to for the common environmental toolset Initiate planning to integrate SSF interface with radars and close the air gap Initiate planning to integrate SSF interface with the GMD Fielded assets Integrate common RDSIS for X-Band radars Initial integration of the BMDS stimulation framework with the ARROW HWIL facility in Israel Evolve and enhance the SSF to provide increased Warfighter support, specifically training and exercises Integrate the SSF with additional Allied/Coalition elements to expand Distributed ground test and exercise venues Initial integration of the SSF with the DSA product line development, sustainment, maintenance and product support for HWIL products Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for ground tests, exercises and demos Conduct BMDS HWIL stimulation framework V&V for BMDS ground tests, exercises and demos 					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
System engineering support to upgrade the BMDS stimulation framework to support wideband debris for BMDS sensors Initial integration of the BMDS stimulation framework with the additional sensors Provide common threat representations and scenarios to met specific event and customer requirements for BMDS HWIL framework <i>FY 2011 Base Plans:</i> In accordance with the Missile Defense Agency revised budget structure, the content previously planned for FY11 is now captured in Project MD31. <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	90.523	48.132	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

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	73.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	73.728

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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 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>
• 0603909C: <i>BMD EUROPEAN MIDCOURSE RADAR</i>											
• 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
• 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

The M&S acquisition strategy is to develop, acquire and deliver the integrated architectures/frameworks while the Elements develop and deliver models of their system. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by FFRDC and UARCs.

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			
Simulation Architecture & Requirements Requirements, System Engineering, Architecture Development, Element Integration YX31	C/CPAF	Northrop Grumman CO	9.778	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Key and Critical Factor Development YX31	C/CPAF	Northrop Grumman CO	0.000	1.032	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements M&S Analysis and Test Objective Development YX31	C/CPAF	Northrop Grumman CO	0.000	1.916	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements M&S Product Baseline & Configuration Management YX31	C/CPAF	Northrop Grumman CO	0.000	1.200	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements M&S Standards YX31	C/CPAF	Northrop Grumman CO	0.000	0.708	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Standards & Conceptual Model Support YX31	C/CPAF	Northrop Grumman CO	0.000	0.090	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Simulation Architecture & Requirements Management Data/ Requirements YX31	C/CPAF	Northrop Grumman CO	0.000	0.361	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements M&S Architecture Requirements and Engineering-1 YX31	C/CPAF	Northrop Grumman CO	0.000	0.464	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Requirements Lean Six Sigma YX31	C/CPAF	Northrop Grumman CO	0.000	0.120	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements M&S Architecture Requirements and Engineering-2 YX31	TBD/TBD	-	0.000	3.598	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Mature M&S Inventory & CM Solution (Database) YX31	C/CPAF	Northrop Grumman CO	0.000	0.378	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Comprehensive BMDS M&S Requirements Engineering YX31	C/CPAF	Northrop Grumman CO	0.000	2.946	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
Simulation Architecture & Requirements Full Initiation: Standards and Conceptual Modeling YX31	TBD/TBD	-	0.000	2.260	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Configuration Management Board YX31	TBD/TBD	-	0.000	0.920	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Data Repository YX31	TBD/TBD	-	0.000	1.542	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Mature Requirements Solution (Database) YX31	C/CPAF	Northrop Grumman	0.000	0.752	Apr 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation SBIRS, JTACS, Digital Modeling Support YX31	C/CPAF	Northrop Grumman CO	0.000	0.200	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Establish Comprehensive Validation Program YX31	TBD/TBD	-	0.000	3.683		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation BMDS	C/CPAF	Northrop Grumman	30.595	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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			
DE SIM (Product Development) YX31		CO											
BMDS Digital Modeling & Simulation BMDS Threat Modeling (Product Development, Sustainment, O&M) YX31	C/CPAF	Northrop Grumman CO	13.548	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Missile Defense Space Warning Tool (MDST) YX31	C/CPAF	Northrop Grumman CO	4.324	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation EADSIM(Prod Dev) YX31	C/FFP	SMDC AL	2.980	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL MDSE Core YX31	Various/ Various	Various AL	21.949	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Ground Test - MDSE- Element Integration YX31	Various/ Various	Various AL	17.598	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Lethality YX31	C/FFP	Various AL	5.060	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Phenomenology YX31	C/FFP	Various Various	6.300	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Engineering Change	C/FFP	Northrop Grumman	1.434	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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			
Proposals (Event Driven) YX31		CO											
BMDS HWIL Single Stimulation Framework YX31	C/FFP	Various Various	4.000	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			117.566	22.170		0.000		0.000		0.000			

Remarks
NA

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			
Simulation Architecture & Requirements Intl Events NATO Agreements Support YX31	C/CPAF	MDA DC	1.022	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Intl Events Bilateral Agreement Support YX31	C/CPAF	Northrop Grumman CO	0.602	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</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			
BMDS HWIL Sim Center Infrastructure YX31	C/FFP	Madison Research Corp AL	6.690	3.326	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL ARC Infrastructure YX31	C/FFP	Colsa AL	21.102	10.820	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			29.416	14.146		0.000		0.000		0.000			

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			
Simulation Architecture & Requirements International Support to DI YX31	TBD/TBD	- -	0.000	0.578	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements NATO ALTBMD Program Office YX31	TBD/TBD	- -	0.000	0.338	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements	TBD/TBD	- -	0.000	0.257	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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			
International Agreements (BASIL, GE Annex E) YX31													
Simulation Architecture & Requirements International Agreements (US-GE Annex, US-UK Lethality) YX31	TBD/TBD	-	0.000	0.425	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation PA Integrated V&V YX31	C/CPAF	Northrop Grumman CO	3.395	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation GT Integrated V&V YX31	C/CPAF	Various AL	5.135	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Gt Models & Anchoring YX31	C/CPAF	Various AL	0.486	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Elem Integration VV&A YX31	C/CPAF	Various AL	1.021	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Wargames & Exercises VV&A YX31	C/CPAF	Northrop Grumman CO	1.188	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL SPAWAR - Pacific, Tactical Comm Emulation (TCES) YX31	C/CPAF	Various AL	0.000	2.478	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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			11.225	4.076		0.000		0.000		0.000			

Remarks

NA

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			
Simulation Architecture & Requirements Government Salaries YX31	TBD/TBD	-	1.189	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Government Travel-1 YX31	TBD/TBD	-	0.162	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements Government Travel-2 YX31	TBD/TBD	-	0.019	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Simulation Architecture & Requirements SETA YX31	TBD/TBD	-	2.029	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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			
Verification, Validation & Accreditation FFRDC - VV&A/Architectures YX31	TBD/TBD	Various CO/MA/GA	3.828	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Government Salaries YX31	TBD/TBD	-	1.188	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Government Travel YX31	TBD/TBD	-	0.160	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation Government Training YX31	TBD/TBD	-	0.018	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Verification, Validation & Accreditation SETA YX31	TBD/TBD	-	1.645	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Government Salaries YX31	TBD/TBD	-	1.188	4.688		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Government Travel YX31	TBD/TBD	-	0.162	0.505		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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			
BMDS Digital Modeling & Simulation Government Training YX31	TBD/TBD	-	0.019	0.095		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation SETA YX31	TBD/TBD	-	1.301	2.452		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL SETA YX31	C/FFP	Various AL	3.036	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Government Salaries YX31	TBD/TBD	SMDC AL	5.825	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Government Travel YX31	TBD/TBD	SMDC AL	0.160	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
BMDS HWIL Government Training YX31	TBD/TBD	SMDC AL	0.040	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			21.969	7.740		0.000		0.000		0.000			

Remarks

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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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
Project Cost Totals	180.176	48.132	0.000	0.000	0.000			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>

	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
DSA-1Q2009	■																											
DSA-2Q2009		■																										
DSA-2Q2010							■																					
DSA-3Q2010								■																				
DSA-4Q2010											■																	
Ground Test-1Q2009-2Q2009	■	■																										
Ground Test-1Q2010-2Q2010						■	■																					
Ground Test-3Q2010								■																				
Ground Test-4Q2010											■																	
Exercises	■																											
ISIM-2Q2009		■																										
ISIM-2Q2010							■																					
TMSS-2Q2009		■																										
TMSS-2Q2010							■																					
TMSS-3Q2009			■																									
TMSS-3Q2010								■																				
Training-2Q2009		■																										
Training-2Q2010							■																					
MDSE-3Q2009			■																									
MDSE-4Q2009				■																								

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Wargames		■																										
MDST-2Q2009		■																										
MDST-2Q2010							■																					
Single Stimulation Framework-1Q2009	■																											
Single Stimulation Framework-2Q2010							■																					
Single Stimulation Framework-4Q2009				■																								
ISIM-4Q2009				■																								
Performance Assessments-4Q2010								■																				

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
DSA-1Q2009	1	2009	1	2009
DSA-2Q2009	2	2009	2	2009
DSA-2Q2010	2	2010	2	2010
DSA-3Q2010	3	2010	3	2010
DSA-4Q2010	4	2010	4	2010
Ground Test-1Q2009-2Q2009	1	2009	2	2009
Ground Test-1Q2010-2Q2010	1	2010	2	2010
Ground Test-3Q2010	3	2010	3	2010
Ground Test-4Q2010	4	2010	4	2010
Exercises	1	2009	1	2009
ISIM-2Q2009	2	2009	2	2009
ISIM-2Q2010	2	2010	2	2010
TMSS-2Q2009	2	2009	2	2009
TMSS-2Q2010	2	2010	2	2010
TMSS-3Q2009	3	2009	3	2009
TMSS-3Q2010	3	2010	3	2010
Training-2Q2009	2	2009	2	2009
Training-2Q2010	2	2010	2	2010

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
MDSE-3Q2009	3	2009	3	2009
MDSE-4Q2009	4	2009	4	2009
Wargames	2	2009	2	2009
MDST-2Q2009	2	2009	2	2009
MDST-2Q2010	2	2010	2	2010
Single Stimulation Framework-1Q2009	1	2009	1	2009
Single Stimulation Framework-2Q2010	2	2010	2	2010
Single Stimulation Framework-4Q2009	4	2009	4	2009
ISIM-4Q2009	4	2009	4	2009
Performance Assessments-4Q2010	4	2010	4	2010

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

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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
MD31: <i>Modeling & Simulation</i>	0.000	0.000	64.623	0.000	64.623	120.904	120.634	122.531	124.937	Continuing	Continuing
Quantity of RDT&E Articles	0	0	6	0	6	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the Modeling and Simulation (M&S) content previously planned in Project YX31 for FY 2009-FY 2010 is now captured in Project MD31.

While the PBR11 funding decreases in the table above, the total M&S program funding increases in FY 2011 because M&S funding for Digital Modeling and Simulation was moved to the Elements for execution in Element specific M&S requirements.

The FY 2011 program is balanced reflecting the four focus areas of the current Missile Defense Program: to develop, rigorously test, and field an integrated BMDS architecture to counter existing regional threats, continue a viable Homeland Defense against rogue threats beyond 2030; demonstrate our proven technologies to show Missile Defense works; and develop technologies to hedge against future missile threat growth.

The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of BMDS configurations, engagement conditions, and target phenomena. The BMDS test review determined how to validate our models and simulations so that our war fighting commanders have confidence in the predicted performance of the BMDS, especially when those commanders consider employing the BMDS in ways other than originally planned or against threats unknown at this time.

A. Mission Description and Budget Item Justification

The mission of MDA's M&S program is to develop models and simulations of the BMDS in order to compare predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of BMDS configurations, engagement conditions, and target phenomena. As a result, MDA strives to develop M&S products and capabilities that are repeatable, consistent and provide confidence in the predicted performance of the BMDS. The M&S objective is to evolve the M&S to match, as appropriate, the real world performance of the BMDS and meet Warfighters needs. M&S's distinct capabilities are ingrained throughout the BMDS Elements and provide the Warfighter and Operational Test Agencies (OTA) with an evaluation capability for individual components and system-of-systems. MDA's M&S accredits system-level models and simulations by anchoring them to real-world events to support accurate and comprehensive assessments of the BMDS. Future M&S developments will focus on the model and simulation framework, BMDS Element models,

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency		DATE: February 2010
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<p>threat assessments and phenomenology and lethality modeling. The success of the missile defense program is enabled by quality M&S products and capabilities that prove with certainty that the BMDS technologies work.</p> <p>Modeling & Simulation: MDA's M&S systems provide analysis, decision-making and planning capabilities for Real-World Operations in support of the White House, Joint Staff, Services, NATO, COCOMs (EUCOM, PACOM, CENTCOM, STRATCOM [Military Utility Assessment]), OTA, Director of Operational Test & Evaluation, and Allies. Targeted M&S activities support all phases of BMDS development including BMDS design, Element modifications, flight test missions, ground tests, wargames, exercises, and performance assessment (PA). Models and simulations are tailored to the specific need of a component in its current phase of development, ranging from low-to-medium fidelity analyses supporting concept definitions studies, to high-fidelity models used to support engineering development.</p> <p>To execute the M&S mission requires reliance and operation of two simulation frameworks which, when combined to meet specific M&S use case and user requirements with the appropriate fidelity, Element and component models form a single Objective Simulation Architecture version to enable BMDS performance in a simulated environment.</p> <p>The BMD Digital Simulations Architecture (DSA) is the primary M&S System framework used to integrate Element baselines prior to flight or ground testing, facilitate technical trade-offs, concept analysis and trade studies, as well as providing support to Wargames and exercises within the BMDS Program. The DSA-performance architecture and Element and component high fidelity models support PA events, which provide critical system level performance data relative to all elements, system engineers, M&S developers, the OTA and Warfighters. The DSA-virtual architecture supports Element baseline integration, training, portions of ground testing and exercises.</p> <p>The BMD Single Stimulation Framework (SSF) utilizes Hardware-In-The Loop (HWIL) assets to support primarily BMDS ground testing, pre and post flight test mission construction and reconstruction, portions of the training capability, Wargames, exercises and BMDS contingency studies, as well as various other use cases to enable BMDS performance in a simulated environment. Each BMDS Element supports the M&S Program by providing HWIL representations ready for integration into the BMDS system-level framework to support full-envelope BMDS ground test, flight test, and training events based upon Agency and Warfighter needs.</p> <p>The BMDS M&S uses the completed Critical Engagement Conditions (CEC's) and Empirical Measurement Events (EME's) data to reconstruct the flight test to perform M&S validation. These M&S Digital and HWIL tools are accredited for each application and for specific CEC's and EME's objectives. They are tools put through a rigorous verification and validation (V&V) process, reviewing coding and specifications, and comparing analyses against actual flight test results (anchoring). V&V planning support is required to develop the comprehensive V&V plan, test objectives development analysis execution planning, analysis for V&V reports and program office M&S certification.</p> <p>The BMDS M&S System is evolving into a fully integrated End-to-End HWIL/Digital system that provide a common source for truth and event control with an Initial Operational Capability (IOC) available in FY 2012. The final integrated system will merge the Single Stimulation Framework (SSF) and Digital Simulation Architectures</p>		

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
<p>(DSA) into one seamless M&S product that will meet both real-time and non-real time simulation activities. This combined framework called the Objective Simulation Framework (OSF) will host all simulated activities, events, scenarios, and Element and Threat models. The end-to-end M&S System will be used to conduct BMDS ground tests and PAs, component training, Wargames, flight tests, threat analysis, international events, and COCOM exercises.</p> <p>The Digital and HWIL End-to-End simulation of the BMDS requires an Integrated V&V Plan and Report (at both element and system level), and a system level Accreditation Plan and Report.</p> <p>System pre- and post-flight reconstruction: The M&S Program will support system pre-flight predictions for each system level flight test using the test framework set up with the BMDS configuration for a particular flight test. This provides the confidence in flight test execution by predicting Element performance and exercising Element interfaces. This work is also used to prove out the construct of the flight test to ensure if the required data and data management plan will support system post flight reconstruction (SPFR) objectives. SPFR will use a HWIL and/or a digital M&S environment to replicate the day of flight for the BMDS configuration, modified to represent the actual environment conditions and target dynamics observed in flight. The results of this testing are used to increase confidence in the models and simulations by anchoring the results with emphasis on the CEC's and EME's back to the real world event. SPFR is used for validation (anchoring) of models and simulations.</p> <p>Interdependencies: MDA's M&S program is key to ensuring missile defense is affordable and effective. Through the use of verified and validated models and accredited simulation tools, the MDA's M&S program provides the cost effective means to prove and explore the performance space of the BMDS beyond what can be physically tested under current range conditions. The SSF and DSA, as stand alone frameworks and as a combined Objective Simulation Framework (OSF) with appropriate element and component models, enhances the defensive capabilities to defend deployed forces, allies and friends against theater missile threats by enabling element integration, Warfighter training and exercises. M&S enables the concept exploration and functional analysis used to defend against rogue threats beyond 2030 by providing the cost effective capability to support BMDS design early in the acquisition life cycle. M&S HWIL and digital frameworks provide the efficient capability to prove the missile defense capability through rigorous testing process to include pre-test, ground test, flight test and post-test activities. Through conceptual simulation activities, M&S provides the capability to design and develop those technologies to hedge against future missile threats. Throughout the budget justification material, we have attempted to highlight interdependencies in order to explain fully the relationship between different parts of the proposed program and how the M&S program enables the required capabilities to meet the threat today and develop the capabilities to defeat those future threats. M&S interdependencies are key in BMDS performance evaluation strategy with models and simulations of the BMDS and require close coordination with the OTA, Elements, COCOMs, Army, Air Force, and numerous MDA organizations.</p> <p>Test: The BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically testing all possible combinations of BMDS configurations, engagement conditions, and target phenomena. The BMDS test review determines how to validate our models and simulations so that our war fighting commanders have</p>		

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confidence in the predicted performance of the BMDS, especially when those commanders consider employing the BMDS in ways other than originally planned or against threats unknown at this time.

The FY 2011 M&S Program focuses on further correction of the deficiencies stated in the 2008 DOT&E BMDS Assessment Report to include:

- Executing BMDS scenarios that flight test cannot assess because of geographic and safety constraints with models and simulations
- Predicting system performance with the use of verified and validated models and simulations
- Executing SPFR to provide empirical data to confirm system performance and to further refine and validate models and simulations
- Continuing to jointly develop accreditation criteria between MDA & OTA
- Continuing to address the V&V of threat models, radar models, kill vehicle models and lethality models

MDA Element testing is based on an integrated, comprehensive, and phased test program as outlined in MDA`s Integrated Master Test Plan (IMTP). Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD System-level testing. M&S Program Element level testing is funded as part of a developmental program and reflected in this Program Element (PE) submission. This PE also provides M&S Program participation in the consolidated MDA-wide System Test Program and the resources for the planning, design, execution and management of M&S in BMDS testing in accordance with the BMDS Test Policy, MDA Directive 3202.03 (Jan 2009). This applies to all flight, integrated ground, and distributed ground tests and post-test analysis and reconstructions listed in the IMTP.

Common Threat Engineering: Common threat engineering produces common and consistent adversary trajectory and signature data to enable BMDS and sub-system concept and requirements, design, verification and assessment. Common Threat data is key to the common truth used as part of the DSA and SSF to prove the BMDS. Common threat is contained in the Adversary Capability Document (ACD) and Adversary Data Packages (ADP) and drives BMDS ground tests, flight tests, digital simulations, and pre-mission analysis initiatives. MDA M&S is used to support European and Russian cooperative activities, North Korean and Iranian pre- and post-flight launch analysis, and the enhanced Israeli Interceptor program.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
HWIL Modeling & Simulation See Description Below	0.000	0.000	29.414	0.000	29.414

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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 program content in this project was previously reported under Project YX31 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX31 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Modify and incrementally upgrade HWIL phenomenology and lethality programs Derive and support implementation and verification of the CEC and EME's to BMDS performance V&V to include the core phenomenology and lethality models Develop, integrate, and test a common BMDS HWIL stimulation framework with the Elements for BMDS ground tests Conduct BMDS HWIL stimulation framework V&V for BMDS ground tests Define and plan for enhancements to the SSF required for execution of BMDS ground test campaigns to include identification of interdependencies required for execution Provide development, operations, support, and Independent Verification and Validation (IV&V) of standardized phenomenology and lethality tools and models to for the common environmental toolset Continue to integrate SSF interface with the CD Upgraded Early Warning Radar (UEWR) and close the air gap Continue planning to integrate SSF interface with the Ground-based Missile Defense fielded assets Integrate common Radar Digital Signal Injection System for X-Band radars Integrate the BMDS stimulation framework with the ARROW HWIL facility in Israel Evolve and enhance the SSF to provide increased Warfighter support, specifically training and exercises Integrate the SSF with additional Allied/Coalition elements to expand distributed BMDS ground test and exercise venues Integrate the SSF with the DSA into the Objective Simulation Framework (OSF) Product line development, sustainment, maintenance and product support for HWIL products</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Plan, develop, integrate and test a common BMDS HWIL stimulation framework with the Elements for BMDS ground tests and demos</p> <p>Conduct BMDS HWIL stimulation framework V&V for BMDS ground tests and demos</p> <p>System engineering support to upgrade the BMDS stimulation framework to support wide band debris for BMDS sensors</p> <p>Initial integration of the BMDS stimulation framework with the additional MDA sensors</p> <p><i>FY 2011 OCO Plans:</i> NA</p>						
<p>BMDS Digital Modeling & Simulation</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX31 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX31 in PB10.</p> <p><i>FY 2011 Base Plans:</i> Provide M&S tools and technical support, and modify code for model, threat, and scenario development</p> <p>Develop and incrementally upgrade the following digital products: DSA, I-SIM, Missile Defense Space Tool (MDST), Threat Modeling Simulation System (TMSS), Threat Generator External (TGx), Extended Air Defense Simulation (EADSIM)</p> <p>Provide M&S tools and technical support, and modify code for model, threat, and scenario development, for conducting National MD Conference Wargames, Congressional Wargames, Multinational Missile Defense Conference Wargames</p>		0.000	0.000	27.484	0.000	27.484

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Provide and integrate validated system-level constructive simulation to support full-envelope BMDS Performance Assessments and flight tests</p> <p>Provide and integrate validated system-level virtual simulation capability to support BMDS ground tests, warfighter training and exercises, and Element integration test driver</p> <p>Provide and integrate validated system-level functional simulation capability to support BMDS concept analysis and stochastic performance analysis</p> <p>Provide and integrate validated wargame simulation capability to support Warfighter CONOPS development</p> <p>Deliver updates to DSA and related interface software to MDA Elements to facilitate model integrations to the DSA framework</p> <p>Support software operations/maintenance of the EADSIM code base</p> <p>Provide validated and intelligence-credible threat ;models across all simulation venues and events</p> <p>Review development requirements from international agreements and track resulting M&S developments</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
<p>M&S Architecture & Requirements</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i> The program content in this project was previously reported under Project YX31 in PB10.</p> <p><i>FY 2010 Plans:</i> The program content in this project was previously reported under Project YX31 in PB10.</p>	0.000	0.000	7.725	0.000	7.725

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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 2011 Base Plans:</i> Develop and publish the Modeling and Simulations Capability Planning Specifications (CPS), System Performance Specifications (SPS), and System Interface Control Documents (ICD) for the Digital Simulation Architecture Framework build 3.0; Phenomenology, Lethality, Environments, Threat, and Communications; Single Stimulation Framework build 2.0. Verify and adjudicate ;stakeholder Modeling and Simulation need statements, capability statements, and capability packages for Epoch 1 testing and assessment in Performance Assessment 12, Ground Test 05 Campaign, Assured Response 05 and Terminal Fury 11. Provide updates and expand the over 170 model capability descriptions in the Missile Defense Agency’s Modeling and Simulation catalog. ; Execute traceability between the Modeling and Simulation requirements database and Modeling and Simulation product development. Leverage MDA’s system engineering processes to produce mature capability documents and specifications in support of Modeling and Simulation product development to enable Missile Defense Agency ground tests, training events, BMDS exercises, BMDS wargames, BMDS Performance Assessments and Missile Defense Agency Element integration.</p> <p><i>FY 2011 OCO Plans:</i> NA</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	64.623	0.000	64.623

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
• 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)

<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>
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	102.823	86.483	86.198	0.000	86.198	88.181	78.517	80.410	83.087	0	605.699

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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>
• 0603904C: <i>MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)</i>											
• 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

The M&S acquisition strategy utilizes full and open competition to develop, acquire and deliver the integrated architectures/frameworks while the Elements, using the same open competition methods, develop and deliver models of their systems. The Digital and HWIL product centers integrate the suite of M&S into a composite simulation capability, all based on an open architecture. M&S achieves this end-state via close collaboration between its integrating contractor teams (Digital and HWIL) and those of the Element prime contractors, with additional technical standards and engineering oversight provided by Federally Funded Research and Development Centers and University Affiliated Research Centers.

MDA will transition using full and open competition 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			
HWIL Modeling & Simulation GT System Mods & Upgrades MD31	TBD/TBD	AMRDEC AL	0.000	0.000		2.888	Oct 2010	0.000		2.888	Continuing	Continuing	Continuing
HWIL Modeling & Simulation Lethality/ Phenomenology Modeling MD31	TBD/TBD	AMRDEC AL	0.000	0.000		3.229	Oct 2010	0.000		3.229	Continuing	Continuing	Continuing
HWIL Modeling & Simulation Single Stimulation Framework & Objective Simulation Framework, Procure, Install, Test MD31	C/CPAF	Boeing AL	0.000	0.000		15.510	Oct 2010	0.000		15.510	Continuing	Continuing	Continuing
HWIL Modeling & Simulation M&S PA/ GT Product Level Requirements MD31	C/FFP	Mantech CO	0.000	0.000		4.607	Jul 2011	0.000		4.607	Continuing	Continuing	Continuing
HWIL Modeling & Simulation DSA/SSF Integration MD31	C/CPAF	Boeing AL	0.000	0.000		3.180	Oct 2010	0.000		3.180	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Digital Simulation Architecture MD31	C/CPAF	Northrop Grumman CO	0.000	0.000		15.386		0.000		15.386	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Performance	C/CPAF	Northrop Grumman CO	0.000	0.000		1.040		0.000		1.040	Continuing	Continuing	Continuing

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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			
Assessment M&S Requirements MD31													
M&S Architecture & Requirements M&S PA/GT Architecture, Requirements, Engineering MD31	C/FFP	Mantech CO	0.000	0.000		5.572	Jul 2011	0.000		5.572	Continuing	Continuing	Continuing
M&S Architecture & Requirements Mature Requirements Solution (Database) MD31	C/FFP	Mantech CO	0.000	0.000		0.790	Jul 2011	0.000		0.790	Continuing	Continuing	Continuing
M&S Architecture & Requirements Mature M&S Inventory & CM Solution (Database) MD31	C/FFP	Mantech CO	0.000	0.000		0.397	Jul 2011	0.000		0.397	Continuing	Continuing	Continuing
M&S Architecture & Requirements Configuration Mgt Board MD31	C/FFP	Mantech CO	0.000	0.000		0.966	Jul 2011	0.000		0.966	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		53.565		0.000		53.565			

Remarks
NA

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks
NA

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			
BMDS Digital Modeling & Simulation	Various/ Various	- -	0.000	0.000		8.006	Oct 2010	0.000		8.006	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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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			
Government Salaries MD31													
BMDS Digital Modeling & Simulation Government Travel MD31	Various/ Various	- -	0.000	0.000		0.505	Oct 2010	0.000		0.505	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Government Training MD31	Various/ Various	- -	0.000	0.000		0.095	Oct 2010	0.000		0.095	Continuing	Continuing	Continuing
BMDS Digital Modeling & Simulation Contractor Support Services MD31	Various/ Various	- -	0.000	0.000		2.452	Oct 2010	0.000		2.452	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		11.058		0.000		11.058			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000	64.623	0.000	64.623			

Remarks
NA

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Assured Response (AR-04A) 1Q2011																												
Assured Response (AR-04X) 4Q2011																												
Assured Response (AR-05A) 4Q2013																												
Assured Response (AR-06A) 1Q2015																												
COCOM Ex (GL12) 1Q2012																												
COCOM Ex (GL13) 1Q2013																												
COCOM Ex (GL14) 1Q2014																												
COCOM Ex (GL15) 1Q2015																												
COCOM Ex (GT12) 3Q2012																												
COCOM Ex (GT13) 3Q2013																												
COCOM Ex (GT14) 3Q2014																												
COCOM Ex (GT15) 3Q2015																												
COCOM Ex (GL11) 1Q2011																												
COCOM Ex (GT11) 3Q2011																												
COCOM Ex (TF11) 3Q2011																												
COCOM Ex (TF12) 3Q2012																												
COCOM Ex (TF13) 3Q2013																												
COCOM Ex (TF14) 3Q2014																												
COCOM Ex (TF15) 3Q2015																												
COCOM Ex (VS11) 1Q2011																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
COCOM Ex (VS12) 1Q2012													■															
COCOM Ex (VS13) 1Q2013																■												
COCOM Ex (VS14) 1Q2014																						■						
COCOM Ex (VS15) 1Q2015																											■	
COCOM WG (FEWg 2010) 1Q2011										■																		
COCOM WG (FEWg 2012) 1Q2013																	■											
COCOM WG (FEWg 2014) 1Q2015																											■	
COCOM WG (NT12) 3Q2012																												■
COCOM WG (NT14) 3Q2014																												■
Congressional WG 2Q2011																												■
Congressional WG 2Q2012																												■
Congressional WG 2Q2013																												■
Congressional WG 2Q2014																												■
Congressional WG 2Q2015																												■
DSA-F v1.0 4Q2011																												■
DSA-P v2.0 3Q2011																												■
DSA-P v3.0 3Q2012																												■
DSA-P v4.0 3Q2013																												■
DSA-P v5.0 3Q2014																												■
DSA-P v6.0 3Q2015																												■

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
DSA-V v2.0 4Q2011												■																
DSA-V v3.0 4Q2012															■													
DSA-V v4.0 4Q2013																												
DSA-V v5.0 4Q2014																												
DSA-V v6.0 4Q2015																											■	
DSA-W v1.0 4Q2011													■															
Digital Simulation Architecture (DSA) v4.0 4Q2011													■															
Digital Simulation Architecture (DSA) v5.0 4Q2012																■												
Digital Simulation Architecture (DSA) v6.0 4Q2013																												
Digital Simulation Architecture (DSA) v7.0 4Q2014																											■	
Digital Simulation Architecture (DSA) v8.0 4Q2015																											■	
GTD-04 2Q2012																											■	
GTD-04 GDEx 3Q2012																											■	
GTD-04 OT 2Q2012																											■	
GTD-04 WF Trial Period 4Q2012																											■	
GTD-05 3Q2014																											■	
GTD-05 GDEx 3Q2014																											■	

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
GTD-05 OT 3Q2014																												
GTD-05 WF Trial Period 4Q2014																												
GTD-06 3Q2015																												
GTI-04 (EXE)																												
GTI-04 (INT)																												
GTI-04 OT 4Q2011																												
GTI-05 (EXE) 4Q2013																												
GTI-05 (INT) 3Q2013																												
GTI-05 OT 1Q2014																												
GTI-06 (EXE) 1Q2015																												
GTI-06 (INT) 3Q2014																												
GTX-04d																												
GTX-04e																												
GTX-05a 4Q2012																												
GTX-05b 1Q2013																												
GTX-06a 3Q2013																												
GTX-06b 4Q2013																												
GTX-06c 2Q2014																												
I-SIM v10.0 2Q2014																												
I-SIM v11.0 2Q2015																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
I-SIM v7.0 2Q2011										■																		
I-SIM v8.0 2Q2012														■														
I-SIM v9.0 2Q2013																				■								
Multi-National Missile Defense Conference WG 4Q2011																												
Multi-National Missile Defense Conference WG 4Q2012																												
Multi-National Missile Defense Conference WG 4Q2013																												
Multi-National Missile Defense Conference WG 4Q2014																												
Multi-National Missile Defense Conference WG 4Q2015																												■
Nat`l MD Conference WG 2Q2011																												
Nat`l MD Conference WG 2Q2012																												
Nat`l MD Conference WG 2Q2013																												
Nat`l MD Conference WG 2Q2014																												
Nat`l MD Conference WG 2Q2015																												
OSF v1.0																												
OSF v2.0																												
OSF v3.0																												

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Exhibit R-4, RDT&E Schedule Profile: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	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
Performance /Technical Assessment (PA/TA11)																												
Performance /Technical Assessment (PA/TA13)																												
Performance /Technical Assessment (PA/TA14)																												
Performance Assessment (PA12 - Epoch 1)																												
Performance Assessment (PA15 - Epoch 2)																												
Single Stimulation Framework v2.0																												
Single Stimulation Framework v3.0 (2nd HWIL string)																												
TMSS v10.0																												
TMSS v11.0																												
TMSS v12.0																												
TMSS v13.0																												
TMSS v14.0																												
TMSS v9.0																												

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Schedule Details

Event	Start		End	
	Quarter	Year	Quarter	Year
Assured Response (AR-04A) 1Q2011	4	2011	4	2011
Assured Response (AR-04X) 4Q2011	1	2011	1	2011
Assured Response (AR-05A) 4Q2013	4	2013	4	2013
Assured Response (AR-06A) 1Q2015	1	2015	1	2015
COCOM Ex (GL12) 1Q2012	1	2012	1	2012
COCOM Ex (GL13) 1Q2013	1	2013	1	2013
COCOM Ex (GL14) 1Q2014	1	2014	1	2014
COCOM Ex (GL15) 1Q2015	1	2015	1	2015
COCOM Ex (GT12) 3Q2012	3	2012	3	2012
COCOM Ex (GT13) 3Q2013	3	2013	3	2013
COCOM Ex (GT14) 3Q2014	3	2014	3	2014
COCOM Ex (GT15) 3Q2015	3	2015	3	2015
COCOM Ex (GL11) 1Q2011	1	2011	1	2011
COCOM Ex (GT11) 3Q2011	3	2011	3	2011
COCOM Ex (TF11) 3Q2011	3	2011	3	2011
COCOM Ex (TF12) 3Q2012	3	2012	3	2012
COCOM Ex (TF13) 3Q2013	3	2013	3	2013
COCOM Ex (TF14) 3Q2014	3	2014	3	2014

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
COCOM Ex (TF15) 3Q2015	3	2015	3	2015
COCOM Ex (VS11) 1Q2011	1	2011	1	2011
COCOM Ex (VS12) 1Q2012	1	2012	1	2012
COCOM Ex (VS13) 1Q2013	1	2013	1	2013
COCOM Ex (VS14) 1Q2014	1	2014	1	2014
COCOM Ex (VS15) 1Q2015	1	2015	1	2015
COCOM WG (FEWg 2010) 1Q2011	1	2011	1	2011
COCOM WG (FEWg 2012) 1Q2013	1	2013	1	2013
COCOM WG (FEWg 2014) 1Q2015	1	2015	1	2015
COCOM WG (NT12) 3Q2012	3	2012	3	2012
COCOM WG (NT14) 3Q2014	3	2014	3	2014
Congressional WG 2Q2011	2	2011	2	2011
Congressional WG 2Q2012	2	2012	2	2012
Congressional WG 2Q2013	2	2013	2	2013
Congressional WG 2Q2014	2	2014	2	2014
Congressional WG 2Q2015	2	2015	2	2015
DSA-F v1.0 4Q2011	4	2011	4	2011
DSA-P v2.0 3Q2011	3	2011	3	2011
DSA-P v3.0 3Q2012	3	2012	3	2012
DSA-P v4.0 3Q2013	3	2013	3	2013

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
DSA-P v5.0 3Q2014	3	2014	3	2014
DSA-P v6.0 3Q2015	3	2015	3	2015
DSA-V v2.0 4Q2011	4	2011	4	2011
DSA-V v3.0 4Q2012	4	2012	4	2012
DSA-V v4.0 4Q2013	4	2013	4	2013
DSA-V v5.0 4Q2014	4	2014	4	2014
DSA-V v6.0 4Q2015	4	2015	4	2015
DSA-W v1.0 4Q2011	4	2011	4	2011
Digital Simulation Architecture (DSA) v4.0 4Q2011	4	2011	4	2011
Digital Simulation Architecture (DSA) v5.0 4Q2012	4	2012	4	2012
Digital Simulation Architecture (DSA) v6.0 4Q2013	4	2013	4	2013
Digital Simulation Architecture (DSA) v7.0 4Q2014	4	2014	4	2014
Digital Simulation Architecture (DSA) v8.0 4Q2015	4	2015	4	2015
GTD-04 2Q2012	2	2012	2	2012
GTD-04 GDEx 3Q2012	3	2012	3	2012
GTD-04 OT 2Q2012	2	2012	2	2012
GTD-04 WF Trial Period 4Q2012	4	2012	4	2012
GTD-05 3Q2014	3	2014	3	2014
GTD-05 GDEx 3Q2014	3	2014	3	2014
GTD-05 OT 3Q2014	3	2014	3	2014

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
GTD-05 WF Trial Period 4Q2014	4	2014	4	2014
GTD-06 3Q2015	3	2015	3	2015
GTI-04 (EXE)	4	2011	4	2011
GTI-04 (INT)	3	2011	3	2011
GTI-04 OT 4Q2011	4	2011	4	2011
GTI-05 (EXE) 4Q2013	4	2013	4	2013
GTI-05 (INT) 3Q2013	3	2013	3	2013
GTI-05 OT 1Q2014	1	2014	1	2014
GTI-06 (EXE) 1Q2015	2	2015	2	2015
GTI-06 (INT) 3Q2014	4	2014	4	2014
GTX-04d	1	2011	1	2011
GTX-04e	3	2011	3	2011
GTX-05a 4Q2012	4	2012	4	2012
GTX-05b 1Q2013	1	2013	1	2013
GTX-06a 3Q2013	3	2013	3	2013
GTX-06b 4Q2013	4	2013	4	2013
GTX-06c 2Q2014	2	2014	2	2014
I-SIM v10.0 2Q2014	2	2014	2	2014
I-SIM v11.0 2Q2015	2	2015	2	2015
I-SIM v7.0 2Q2011	2	2011	2	2011

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
I-SIM v8.0 2Q2012	2	2012	2	2012
I-SIM v9.0 2Q2013	2	2013	2	2013
Multi-National Missile Defense Conference WG 4Q2011	4	2011	4	2011
Multi-National Missile Defense Conference WG 4Q2012	4	2012	4	2012
Multi-National Missile Defense Conference WG 4Q2013	4	2013	4	2013
Multi-National Missile Defense Conference WG 4Q2014	4	2014	4	2014
Multi-National Missile Defense Conference WG 4Q2015	4	2015	4	2015
Nat`l MD Conference WG 2Q2011	2	2011	2	2011
Nat`l MD Conference WG 2Q2012	2	2012	2	2012
Nat`l MD Conference WG 2Q2013	2	2013	2	2013
Nat`l MD Conference WG 2Q2014	2	2014	2	2014
Nat`l MD Conference WG 2Q2015	2	2015	2	2015
OSF v1.0	3	2013	3	2013
OSF v2.0	3	2014	3	2014
OSF v3.0	3	2015	3	2015
Performance /Technical Assessment (PA/TA11)	4	2011	4	2011
Performance /Technical Assessment (PA/TA13)	4	2013	4	2013
Performance /Technical Assessment (PA/TA14)	4	2014	4	2014
Performance Assessment (PA12 - Epoch 1)	4	2012	4	2012
Performance Assessment (PA15 - Epoch 2)	4	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: 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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD31: <i>Modeling & Simulation</i>
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Event	Start		End	
	Quarter	Year	Quarter	Year
Single Stimulation Framework v2.0	3	2012	3	2012
Single Stimulation Framework v3.0 (2nd HWIL string)	2	2013	2	2013
TMSS v10.0	1	2012	1	2012
TMSS v11.0	1	2011	1	2011
TMSS v12.0	1	2013	1	2013
TMSS v13.0	1	2014	1	2014
TMSS v14.0	1	2015	1	2015
TMSS v9.0	1	2011	1	2011

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

APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE					PROJECT			
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>			PE 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>					YX32: <i>Quality, Safety, and Mission Assurance</i>			
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
YX32: <i>Quality, Safety, and Mission Assurance</i>	24.674	31.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	55.683
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budgets structure, the content of the previously planned in Project YX32 for FY11-FY15 are now captured in Project MD32.

A. Mission Description and Budget Item Justification

The Missile Defense Agency (MDA) Quality, Safety, and Mission Assurance (QSMA) group provides to the Agency the expertise necessary to ensure the success of the Ballistic Missile Defense System (BMDS). The Agency Director has emphasized the significant role of quality and safety in mission success and the importance of protecting people from catastrophic accidents and failures.

Over the past few years, using the Ground based Midcourse Defense (GMD) launch aborts as an example, the QSMA team has made dramatic improvements that impact the BMDS, present and future. A combination of enforcing the MDA assurance provisions on all mission critical suppliers, and establishing an audit program revealed significant shortfalls that prompted the Director to action. The audit findings, direct unbiased weekly reports, and GBI failures formed the rational for establishing the Mission Readiness Task Force (MRTF).

QSMA has made several quality overhauls through rigorous audits. In the past two years, the audit process has become more rigorous resulting in more relevant audit findings and subsequent corrective actions. Audit results are tracked for several months culminating in process improvements, enhancing statistical controls, cultural changes, and best practices.

The QSMA culture espouses near and long term priorities and solutions for MDA. Since QSMA was established in 2002, proactive efforts have turned ideas into BMDS solutions. Currently, two quality and safety initiatives are contractual requirements for all programs. These initiatives, MDA Assurance Provisions, (MAP), Government MDA Assurance Provisions, (GMAP), and the Parts, Materials, and Process Mission Assurance Plan (PMAP) standardize the way MDA does business relative to

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quality, safety, and mission assurance. Currently, 7 programs have placed the MAP on contract. Also, Raytheon uses the MAP as a corporate standard, not only for MDA but all their defense programs.

QSMA facilitated a unique government and industry partnership which salvaged the Eagle Picher Company, a critical sole source battery supplier for 5 major MDA programs. Timely intervention with disciplined quality and safety guidance was key to restoring Eagle Picher as a stable supplier. Moreover, test failures have decreased, on-time deliveries have increased, and the supplier quality measurement rating increased greatly this year. Eagle Picher's successful turnaround prompted another government industry partnership to address the Pacific Scientific company in a similar situation. It also has embraced stakeholder involvement and is committed to resolving major issues. All indications show that Pacific Scientific is on the path to success.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Travel/PCS See Description Below <i>FY 2009 Accomplishments:</i> The FY09 planned program builds upon the previous year's development of expertise and closes the loop with BMDS processes such as risk management, non-conformance reporting, and Reliability, Maintainability, and Availability (RMA). Through QSMA administration of these processes QSMA is able to link as-built performance of the systems to systems engineering. This will ensure that the operational system further meets Agency requirements and that any anomalous behavior is documented, tracked, measured, and resolved. BMDS Independent Mission Assurance & Safety Assessments	24.674	31.009	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>Administer BMDS non-conformance, risk management, and Reliability, Maintainability, and Availability (RMA) process by providing the leadership and administrative resources necessary for ensuring effective operation and metric reporting.</p> <p>Conduct system analysis/assessments such as reliability prediction analysis, failure modes and effects criticality analysis, safety hazards analysis etc.</p> <p>Continue to perform independent mission assurance assessments on GMD, THAAD and Aegis test flight tests. By acquiring additional resources, increase system cognizance and provide greater depth in assessments.</p> <p>Continue independent assessments for significant ground flight tests. By acquiring additional resources, increase system cognizance and provide greater depth in assessments.</p> <p>Continue to provide Independent Readiness Review Team support by providing senior specialists.</p> <p>Manage the integrated MDA Software Metrics Program to provide information on the health of the BMDS to MDA management.</p> <p>Continue operating the BMDS Material and Failure Review Board to resolve significant Supplier non-conformances.</p> <p>Conduct independent Safety Assessments/Reviews of MDA programs and Elements to enhance BMDS safety</p> <p>Maintain the MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS activities are conducted safely.</p> <p> Quality, Safety and Mission Assurance Audits</p> <p>Conduct up to 6 unannounced Agency large scale Mission Assurance audits to continue enhancement of quality in BMDS products.</p> <p>Perform 2 safety audits based on safety concerns</p> <p>Perform 2 post audit corrective action assessments as necessary to accelerate audit resolution.</p> <p>MDA Assurance Provisions (MAP) Implementation</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>Update MAP revision to address Lessons Learned, inputs from the Industry Specification Working Group, and to improve metric reporting throughout the Agency. Continue working with existing Programs Elements to get the MAP on contract and to track individual Program status.</p> <p>On-Site Support - Mission Assurance Representatives (MAR) & BMDS Safety Officers</p> <p>Expand on-site reporting to include engineers at key locations where design work occurs. Continue to increase on-site performance through further development of cognizant engineer data books aimed at improving the MARs systems engineering awareness. Expand BMDS Safety Officer Program by adding engineers to aid the 24/7 team in ensuring that the BMDS is operated safely when in test or operational modes. Engineering support shall provide greater knowledge of fire control loop. Provide further refinement in the end-of-week processing by metric processing on Quality Issues Tracking System. Manage the MDA BMDS Safety Officer Program to ensure that the BMDS is operated safely when in test or operational modes. Maintain and coordinate safety career training program. Continue performing weekly mission assurance and safety walk-downs. Using Supplier metrics, continue to pursue process improvements.</p> <p>MDA Parts and Materials Program</p> <p>Continue to provide technical support via the Center of Excellence (COE) to address Program Element and Supplier part and material issues arising from the Agency Part, Material, and Processes Board (PMPB); and the Program Element Parts, Materials, and Processes Control Boards (PMPCB). Agency</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>PMPB ensures uniformity; PMPCB is the Program Element decision board that works directly with the Suppliers. Work with each Program Element to adjudicate part and material issues, i.e., waivers and deviations, arising from PMAP requirements. Using the COE resources and lab capability, create test methods for new emerging technologies. Using data from cost assessments and industry road shows, update the MDA PMAP. Incorporate in the revision Industry practices known to increase product reliability. Update the Agency preferred parts and materials list database that facilitates new system design and the resolution of part obsolescence issues.</p> <p>Government MDA Assurance Provisions (GMAP)</p> <p>Continue supporting Public Law 107-314, Section 804 ``Improvement of software acquisition processes`` Bob Stump National Defense Authorization Act for Fiscal Year 2003. GMAP used to ensure each Program Element has a Software Acquisition Improvement Program Update the GMAP for further refinements in software acquisition strategies. Continue to provide metric assessments to the Director for each Program Element Senior Executive Review. Update the MDA Software Verification and Validation Program</p> <p>Program Support</p> <p>Continue providing mission assurance support to Kinetic Energy Interceptor (KEI), Advanced Sensors, Multiple Kill Vehicle (MKV), and Sensors Forward Based X-Band Transportable Radar (AN/TPY-2) program offices. Continue safety support to Advanced Sensors, MKV, and AN/TPY-2 program office. Continue providing GMD with Navy quality expertise for SBX operations.</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>Intra-Agency & Industry Activities</p> <p>Perform the next yearly major Supplier Initiative. Leveraging the cooperation of several prime Supplier contracts, create a task force to address quality concerns associated with a particular supplier. Specification and Standards Working Group for Industry acceptance of core quality standards to be applied in Supplier contracts.</p> <p>Provide participation in the Defense Standardization Board to ensure that MDA has an equal voice in Continue the sharing of lessons learned with NASA, National Reconnaissance Office (NRO) and other DOD organizations.</p> <p>Maintain the Range Safety mediation, augmentation and commonality program.</p> <p>Safety and Occupational Health</p> <p>Continue management oversight of MDA safety policies and requirements addressed in DoD safety directives.</p> <p>Perform all required Occupational Safety and Health Inspections of MDA facilities</p> <p>Maintain MDA's Safety and Quality Concerns Hotline · Conduct required Federal and Department of Defense safety training</p> <p>Represent MDA at Office of Secretary of Defense (OSD) level safety meetings and task forces</p> <p>Ensure safety and occupational health involvement in facilities planning</p> <p>Prepare reports for MDA, DOD and other Federal safety presentations.</p> <p>Support quality, mission assurance, and safety audits and assessments.</p> <p>Proactively ensure a safe working environment for all MDA employees and operations through compliance and enforcement of OSHA (Occupational Safety and Health Administration) and DoD directives</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>Conduct safety risk assessments per The Department of Defense Standards Practice for System Safety, of all test and operational systems to ensure catastrophic risks remain improbable. Provide non-advocate safety oversight /support to Agency key engineering and configuration management forums.</p> <p>Conduct system analysis/assessments such as reliability prediction analysis, failure modes and effects criticality analysis, safety hazards analysis etc., to lower flight and operational system risks. Maintain the MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS activities are conducted safely. Quality, Safety and Mission.</p> <p>Mission Assurance</p> <p>Provide non-advocate independent mission assurance oversight/support to Agency key engineering and configuration management forums.</p> <p>Perform non-conformance reporting, tracking, and migration for all major flight and ground test Theater High Altitude Ariel Defense (THAAD), Ground Based Missile Defense (GMD) and Aegis operations. Perform independent mission assurance assessments on GMD, THAAD and Aegis test flight tests systems, including participation in requirement verification forums.</p> <p>Conduct system analysis/assessments such as reliability prediction analysis, failure modes and effects criticality analysis, safety hazards analysis etc., to lower flight and operational system risks. Continue supporting the BMDS Material and Failure Review Board to resolve significant Supplier non-conformances.</p> <p>Provide technical expertise in internal ``Top Level Decision`` technical meetings to identify and determine if a mission assurance/safety/quality subject is properly represented and/or needs to be elevated to the Director.</p> <p>Assurance Audits</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>Conduct no-knock full scale Mission Assurance audits (approx 40 people for 2 weeks), approximately corrective action assessments, and safety audits as necessary at key mission critical suppliers. Mission assurance audits identify Supplier deficiencies in design, test, manufacturing, quality and safety. These audits have generated over a thousand findings, holding the Program Offices and Suppliers accountable to resolve all issues. Accountability has been enhanced as these audits have played a significant role in the award fee process.</p> <p>Mission Assurance Representatives (MAR)</p> <p>These representatives perform government on-site quality and mission assurance support at 23 sites. The MARs ensure that MDA mission critical components / assemblies follow and employ MDA QSMA requirements and other best industry practices for design, test and manufacturing. They provide on-site, ``boots-on-the-ground``, technical expertise identify design and manufacturing process flaws early in the production cycle to facilitate a low cost resolution. MARs walk the production floor daily to address operational issues, meet with technical counterparts to address proper root-cause and resolution, and provide Supplier management direct access to MDA government to address Supplier concerns. By functioning as the Agency`s on-site ``eyes and ears`` the MARs effectively ensure Program Offices are acutely aware of Supplier issues.</p> <p>Perform weekly mission assurance and safety walk-downs with the Defense Contract Management Agency (DCMA). By working closely with DCMA quality counterparts, the MAR-DCMA team forms an effective force to resolve major issue.</p> <p>Increase on-site support performance through industry best practice training for solder workmanship, electrostatic sensitive device requirements, foreign object debris, etc.</p> <p>BMDS Safety Officers (BSOs)</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>Perform 24/7 safety monitoring of operational and test systems to ensure safe transition between test and operations. BSOs provide round-the-clock safety situational awareness, coordinating with Warfighter to correctly identify missile track information (friend or foe). BSOs also evaluate operational to test transitions to determine safety risks associated with configuration changes.</p> <p>Perform monitoring and tracking of non-conformance behavior of the operational system. Coordinates with Warfighter and QS mission assurance on proper root cause and resolution of all anomalies.</p> <p>MDA Parts and Materials Program</p> <p>Continue to enforce Program compliance to the Missile Defense Agency Part, Material and Processes Assurance Provisions (PMAP). PMAP provides comprehensive requirements that govern the use of Electrical, Electronic and Electromechanical (EEE) parts used in high reliability, strategic systems. Document ensures similar major assemblies contain parts with identical reliability requirements. It also leads the DOD on explicit requirements to preclude counterfeit parts from entering mission critical systems.</p> <p>Eliminate Program contractual gaps between PMAP and Supplier part and material plans.</p> <p>Continue to maintain the MDA Advisory Program for Parts and Materials. Program rapidly promulgates part and material issues arising on other Programs, providing detailed recommendations for resolution.</p> <p>Continue to provide a Part and Material knowledge center to address Program and Supplier part and material issues arising from development or fielded systems. Organization supports Program surveillance and refurbishment operations to ensure fielded life requirements are met.</p> <p>Using the knowledge center and its leverage off of DOD existing labs, create test methods for new emerging EEE part technologies.</p> <p>Update the Agency's preferred parts and materials list database to facilitate new system design and to identify part obsolescence issues.</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>Acquisition Support</p> <p>Ensure all new acquisitions are in compliance with the MDA Assurance Provisions (MAP), the MDA Parts, Materials and Processes Assurance Provisions and all applicable DFAR, FAR, and clauses regarding quality, safety and mission assurance. The MAP is a comprehensive document governing best industry practices for design, test, manufacturing, quality, maintainability and safety. It contains approximately 1800 requirements known and well accepted within industry to promote / ensure product reliability.</p> <p>Update the Missile Defense Agency Assurance Provisions (MAP) document to incorporate design, test, manufacturing, quality, safety, and mission assurance lessons learned to further improve acquisition requirements.</p> <p>Improve MDA`s acquisition strategy through participation in the definition and determination of all award fees. Provide in the award fee structure specific QSMA criteria to assess worthiness of awards using waivers / deviations and quality metric information from Programs QSMA organization and MARs.</p> <p>Participation in all acquisition meetings including Acquisition Strategy Board, Acquisition Strategy Panel, Source Evaluation Board, Source Selection Board.</p> <p>Technical Assistance to MDA Elements</p> <p>Provide on-site QSMA surge support at suppliers having quality concerns. Surge team provides ``full-contact`` quality which is simply coverage of all integration, transport and testing to ensure compliance to Supplier build paper and Industry best practices. Surge team provides subject matter / quality expertise to supplement the Suppliers team when insufficient resources exist.</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>Perform independent / non-advocate reviews, such as design certification, pedigree, failure, preliminary design, critical design and technical interchange reviews to ensure compliance with industry best practices.</p> <p>Provide mission assurance support to major failure review boards to ensure comprehensive mitigation strategies for operational assets are employed.</p> <p>Continue providing GMD with Navy quality expertise for SBX operations. This includes a Mission Assurance Representative (MAR) on board the SBX vessel at all times.</p> <p> </p> <p>Intra-Agency & Industry Activities</p> <p>Further leverage resources with other agencies to maximize on-site quality support. This is done, for example, by Memorandum of Agreement (MOA) with such agencies as the Navy NAVSEA organizations at Corona, Dahlgren, Crane and also Hill Air Force Base, US Army Aviation and Missile Research Development and Engineering Center (AMRDEC). In working closely with these outside agencies, QS is able to increase its quality footprint across the supplier base and improve its leverage in addressing major issues. These relationships currently in effect, enables MDA to explicitly identify mandatory government inspection points during critical operations, and staff critical audit and inspection activities.</p> <p>Perform major stakeholder quality initiatives to improve quality of products, improve onsite processes, and internal requirements at critical sole source suppliers. Similar to previous initiatives, MDA-QS led initiatives, these stakeholder initiatives join government and, industry resources from Prime Contractors to improve quality problems at a common sub-tier Supplier.</p> <p>Participate in the Defense Standardization Board to ensure that MDA has an equal voice in the specification and standard requirements used across the DOD.</p> <p>Initiate & Lead quality, safety and mission assurance forums to obtain lessons learned and understand / promote new requirements or methods. QS routinely sponsors and leads NASA's Quality Leadership Forum, Space Supplier Council, Joint Mission Assurance Committee, Space Quality</p>					

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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
• 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
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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

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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>
• 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
• 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

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX32: <i>Quality, Safety, and Mission Assurance</i>
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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>	87.151	52.403	29.754	0.000	29.754	29.421	29.974	30.567	31.171	0	290.441

D. Acquisition Strategy

The execution of an effective Quality, Safety and Mission Assurance program is carried out in collaboration with subject matter expertise found in the Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), Science, Engineering and Technical Assistance (SETA), and Industry.

E. Performance Metrics

N/A

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX32: <i>Quality, Safety, and Mission Assurance</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Travel/PCS OGA Quality Surge Support & Core YX32	TBD/TBD	NSWC Corona CA, VA	3.150	3.100	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS Mission Assurance/Audits YX32	TBD/Various	SRS Tech VA, MD	1.500	10.526	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS OGA Crane PMP YX32	TBD/TBD	NSWC Crane IN, VA	2.350	1.716	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS S/W Acquisition YX32	TBD/TBD	Hill PA, VA	0.400	0.400	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS Pedigree, DCRs Review YX32	TBD/TBD	Aerospace, SEI PA, CA, VA	0.500	2.500	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS Parts & Material Expertise YX32	TBD/TBD	AMRDEC AL	0.800	1.615	Jul 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
	C/FFP	SRS	4.086	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT YX32: <i>Quality, Safety, and Mission Assurance</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			
Travel/PCS Safety & Quality Audits YX32		-											
Travel/PCS Govt Sept YX32	TBD/TBD	NSWC VA Beach VA	0.300	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS Parts Material Pro YX32	TBD/TBD	NSWC Crane IN, VA	2.378	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			15.464	19.857		0.000		0.000		0.000			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

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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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			
Travel/PCS QS Civilian Salaries YX32	TBD/TBD	MDA VA,MD,AL,CA,AZ,HI,AK,MA,NJ,FL,AR,UT,MH	8,005	9,852	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Travel/PCS Travel/PCS YX32	TBD/ Various	MDA VA,MD,AL,CA,AZ,HI,AK,MA,NJ,FL,AR,UT,MH	1,205	1,300	Jan 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			9.210	11.152		0.000		0.000		0.000			

Remarks
NA

	Total Prior Years Cost	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		24.674	31.009	0.000	0.000			

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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</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
MD32: <i>Quality, Safety, and Mission Assurance</i>	0.000	0.000	32.881	0.000	32.881	33.094	30.326	30.885	31.219	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budgets structure, the contents of the previously planned FY09-FY10 are in Project YX32.

A. Mission Description and Budget Item Justification

Provide Mission Assurance Representatives (MAR) which are ``boots on the ground`` and the ``Eyes and Ears`` for the MDA Director at government and contractor facilities. These are Government Mission Assurance and Quality experts provide oversight ranging from production work to the executive management. Conduct QS Mission Assurance Audits which are one of MDA`s most effective methods to effect change among the MDA contractors and suppliers. Focus on processes and procedures; audits performed on contractual requirements, internal requirements and industry best corrective action assessments. Provide Subject Master Experts that attend all technical reviews, i.e. Design, test, and mission readiness reviews, to ensure mission assurance principles, quality practices and procedures are implemented across the BMDS. Develop overarching quality guidance such as the MDA assurance Provisions (MAP) for MDA. Review vehicle pedigree documentation ensure all integration and testing rework and repair is performed within approved processes. Provide technical expertise in internal ``Top Level Decision`` technical meetings to identify and determine is a mission assurance/safety/quality subject is properly represented and /or needs to be elevated to the Director.

Quality

Provide on -site full up Quality Assurance coverage on all flight test to ensure mission success and all processes and procedures are adhere to, and no short cuts or deviations occur. Provide quality Subject Matter Experts that attend all technical reviews, i.e. Design, test and mission readiness reviews, to ensure quality practices and procedures are implemented across BMDS. Develop overarching quality requirement documentation such as the MAP for MDA. Ensures the integrity and standards are maintained on all system parts and processes through manufacturing and implementation. Provided quality for on-site formal recording and resolution of non-conformances and anomalies during test per MDA/BMDS requirement Initiate and lead on-site ``Joint Government and Industry Team`` field support and expertise to assist when critical sole source suppliers are failing. Team conducts stake holder initiatives to revamp sole source suppliers by assisting them in getting healthy and perform at ``world class`` level. Provide on-site full up Quality Assurance coverage on all ground test to ensure mission success and all processes and procedures are adhered to and no short cuts or deviations occur.

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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Safety

Responsible for the Safety and Occupational Health for NCR, HSV, Ft. Greely, and VAFB. Responsible for ensuring the complete overall safety of workforce for Civilian, Contractor and Military personnel. Ensure overall System Safety. Verification and assurance that the BMDS system is safety compliant from design development through operational (software, mechanical design, and operations). Provide 24-7 On-site support to ensure operational safety of systems. Verify that all systems are functioning and tracking against actual verified targets and all associated processes and procedures are strictly followed.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Travel/PCS See Description Below <i>FY 2009 Accomplishments:</i> NA <i>FY 2010 Plans:</i> NA <i>FY 2011 Base Plans:</i> The FY11 planned Quality and Mission Assurance program maintains on-site quality, and mission assurance oversight at key suppliers, creates a consistent set of QSMA acquisition requirements for each new contract, provides safety and quality operations for flight tests, ruthlessly pursues root cause and correction of anomalies, and continues to infuse best industry practices into program supplier operations. With QS as a direct report to the Agency Director, it provides a non-advocate, independent perspective on Supplier and Agency operations across the Ballistic Missile Defense System. The planned Safety program maintains on-site safety oversight at key suppliers and government facilities, creates a consistent set of safety acquisition requirements for each new contract, provides safety operations for flight tests, ruthlessly pursues root cause and correction of anomalies and or discrepancies.	0.000	0.000	32.881	0.000	32.881

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>BMDS Quality, Safety and Mission Assurance Support</p> <p>Quality</p> <p>Provide non-advocate independent quality oversight/support to Agency key engineering and configuration management forums. Perform configuration management verification and reconciliation for all major flight and ground test assets. Ensure strict process control over integration delivery and conduct of all major flight and ground tests.</p> <p>Safety</p> <p>Conduct safety risk assessments per The Department of Defense Standards Practice for System Safety, of all test and operational systems to ensure catastrophic risks remain improbable. Provide non-advocate safety oversight /support to Agency key engineering and configuration management forums. Conduct system analysis/assessments such as reliability prediction analysis, failure modes and effects criticality analysis, safety hazards analysis etc., to lower flight and operational system risks. Maintain the MDA Safety Review Board, MDA Range Safety Council and BMDS Safety Working Groups to ensure that all BMDS activities are conducted safely. Quality, Safety and Mission.</p> <p>Mission Assurance</p> <p>Provide non-advocate independent mission assurance oversight/support to Agency key engineering and configuration management forums.</p>					

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>Perform non-conformance reporting, tracking, and migration for all major flight and ground test Terminal High Altitude Area Defense (THAAD), Ground Based Missile Defense (GMD) and Aegis operations.</p> <p>Perform independent mission assurance assessments on GMD, THAAD and Aegis test flight tests systems, including participation in requirement verification forums.</p> <p>Conduct system analysis/assessments such as reliability prediction analysis, failure modes and effects criticality analysis, safety hazards analysis etc., to lower flight and operational system risks.</p> <p>Continue supporting the BMDS Material and Failure Review Board to resolve significant Supplier non-conformances.</p> <p>Provide technical expertise in internal ``Top Level Decision`` technical meetings to identify and determine if a mission assurance/safety/quality subject is properly represented and/or needs to be elevated to the Director.</p> <p>Assurance Audits</p> <p>Conduct no-knock full scale Mission Assurance audits (approx 40 people for 2 weeks), approximately corrective action assessments, and safety audits as necessary at key mission critical suppliers. Mission assurance audits identify Supplier deficiencies in design, test, manufacturing, quality and safety. These audits have generated over a thousand findings, holding the Program Offices and Suppliers accountable to resolve all issues. Accountability has been enhanced as these audits have played a significant role in the award fee process.</p> <p>Mission Assurance Representatives (MAR)</p> <p>These representatives perform government on-site quality and mission assurance support at 23 sites. The MARs ensure that MDA mission critical components / assemblies follow and employ MDA QSMA requirements and other best industry practices for design, test and manufacturing. They provide on-site, ``boots-on-the-ground``, technical expertise identify design and manufacturing process flaws</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency	DATE: February 2010
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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>early in the production cycle to facilitate a low cost resolution. MARs walk the production floor daily to address operational issues, meet with technical counterparts to address proper root-cause and resolution, and provide Supplier management direct access to MDA government to address Supplier concerns. By functioning as the Agency`s on-site ``eyes and ears`` the MARs effectively ensure Program Offices are acutely aware of Supplier issues.</p> <p>Perform weekly mission assurance and safety walk-downs with the Defense Contract Management Agency (DCMA). By working closely with DCMA quality counterparts, the MAR-DCMA team forms an effective force to resolve major issue.</p> <p>Increase on-site support performance through industry best practice training for solder workmanship, electrostatic sensitive device requirements, foreign object debris, etc.</p> <p> </p> <p>BMDS Safety Officers (BSOs)</p> <p>Perform 24/7 safety monitoring of operational and test systems to ensure safe transition between test and operations. BSOs provide round-the-clock safety situational awareness, coordinating with Warfighter to correctly identify missile track information (friend or foe). BSOs also evaluate operational to test transitions to determine safety risks associated with configuration changes.</p> <p>Perform monitoring and tracking of non-conformance behavior of the operational system. Coordinates with Warfighter and QS mission assurance on proper root cause and resolution of all anomalies.</p> <p> </p> <p>MDA Parts and Materials Program</p> <p>Continue to enforce Program compliance to the Missile Defense Agency Part, Material and Processes Assurance Provisions (PMAP). PMAP provides comprehensive requirements that govern the use of Electrical, Electronic and Electromechanical (EEE) parts used in high reliability, strategic systems. Document ensures similar major assemblies contain parts with identical reliability requirements. It</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>also leads the DOD on explicit requirements to preclude counterfeit parts from entering mission critical systems.</p> <p>Eliminate Program contractual gaps between PMAP and Supplier part and material plans.</p> <p>Continue to maintain the MDA Advisory Program for Parts and Materials. Program rapidly promulgates part and material issues arising on other Programs, providing detailed recommendations for resolution.</p> <p>Continue to provide a Part and Material knowledge center to address Program and Supplier part and material issues arising from development or fielded systems. Organization supports Program surveillance and refurbishment operations to ensure fielded life requirements are met.</p> <p>Using the knowledge center and its leverage off of DOD existing labs, create test methods for new emerging EEE part technologies.</p> <p>Update the Agency's preferred parts and materials list database to facilitate new system design and to identify part obsolescence issues.</p> <p> </p> <p>Acquisition Support</p> <p>Ensure all new acquisitions are in compliance with the MDA Assurance Provisions (MAP), the MDA Parts, Materials and Processes Assurance Provisions and all applicable DFAR, FAR, and clauses regarding quality, safety and mission assurance. The MAP is a comprehensive document governing best industry practices for design, test, manufacturing, quality, maintainability and safety. It contains approximately 1800 requirements known and well accepted within industry to promote / ensure product reliability.</p> <p>Update the Missile Defense Agency Assurance Provisions (MAP) document to incorporate design, test, manufacturing, quality, safety, and mission assurance lessons learned to further improve acquisition requirements.</p> <p>Improve MDA's acquisition strategy through participation in the definition and determination of all award fees. Provide in the award fee structure specific QSMA criteria to assess worthiness of awards</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>using waivers / deviations and quality metric information from Programs QSMA organization and MARs.</p> <p>Participation in all acquisition meetings including Acquisition Strategy Board, Acquisition Strategy Panel, Source Evaluation Board, Source Selection Board.</p> <p>Technical Assistance to MDA Elements</p> <p>Provide on-site QSMA surge support at suppliers having quality concerns. Surge team provides ``full-contact`` quality which is simply coverage of all integration, transport and testing to ensure compliance to Supplier build paper and Industry best practices. Surge team provides subject matter / quality expertise to supplement the Suppliers team when insufficient resources exist.</p> <p>Perform independent / non-advocate reviews, such as design certification, pedigree, failure, preliminary design, critical design and technical interchange reviews to ensure compliance with industry best practices.</p> <p>Provide mission assurance support to major failure review boards to ensure comprehensive mitigation strategies for operational assets are employed.</p> <p>Continue providing GMD with Navy quality expertise for SBX operations. This includes a Mission Assurance Representative (MAR) on board the SBX vessel at all times.</p> <p>Intra-Agency & Industry Activities</p> <p>Further leverage resources with other agencies to maximize on-site quality support. This is done, for example, by Memorandum of Agreement (MOA) with such agencies as the Navy NAVSEA organizations at Corona, Dahlgren, Crane and also Hill Air Force Base, US Army Aviation and Missile Research Development and Engineering Center (AMRDEC). In working closely with these outside agencies, QS is able to increase its quality footprint across the supplier base and improve its leverage in addressing major issues. These relationships currently in effect, enables MDA to explicitly</p>					

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Conduct required Federal and Department of Defense safety training Represent MDA at Office of Secretary of Defense (OSD) level safety meetings and task forces. Prepare reports for MDA, DOD and other Federal institutions. Support quality, mission assurance, and safety audits and assessments. <i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	32.881	0.000	32.881

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
• 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
	182.998	250.185	270.189	0.000	270.189	269.040	450.645	517.486	601.315	0	2,541.858

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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 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>
• 0603891C: <i>SPECIAL PROGRAMS - MDA</i>											
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	26.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	26.016

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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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 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>
• 0603912C: <i>BMD European Comm Support</i>											
• 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
• 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

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.

The execution of an effective Quality, Safety and Mission Assurance program is carried out in collaboration with subject matter expertise found in the Government, Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARC), Science, Engineering and Technical Assistance (SETA), and Industry.

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>

E. Performance Metrics

N/A

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Travel/PCS OGA Quality Surge Support & Core MD32	Various/ Various	NSWC CORONA CA, VA	0.000	0.000		3.100	Oct 2010	0.000		3.100	Continuing	Continuing	Continuing
Travel/PCS Mission Assurance/Audits MD32	C/FFP	TBD VA, MD	0.000	0.000		10.526	Oct 2010	0.000		10.526	Continuing	Continuing	Continuing
Travel/PCS OGA Crane PMP MD32	Various/ Various	NSWC Crane IN, VA	0.000	0.000		1.716	Oct 2010	0.000		1.716	Continuing	Continuing	Continuing
Travel/PCS S/W Acquisition MD32	Various/ Various	Hill PA, VA	0.000	0.000		0.400	Oct 2010	0.000		0.400	Continuing	Continuing	Continuing
Travel/PCS Pedigree, DCRs Review MD32	TBD/TBD	Aerospace, SEI PA, CA, VA	0.000	0.000		2.500	Oct 2010	0.000		2.500	Continuing	Continuing	Continuing
Travel/PCS Parts & Material Expertise MD32	Various/ Various	AMRDEC AL	0.000	0.000		1.615	Oct 2010	0.000		1.615	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		19.857		0.000		19.857			

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</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			

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			
Subtotal			0.000	0.000		0.000		0.000		0.000			

Remarks

NA

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			
Travel/PCS QS Civilian Salaries MD32	TBD/TBD	MDA VA, MD, AI, CA, AZ, HI, AK.MA,	0.000	0.000		11.373	Jan 2011	0.000		11.373	Continuing	Continuing	Continuing

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD32: <i>Quality, Safety, and Mission Assurance</i>
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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			
		NJ, FLM AR, UT, MH											
Travel/PCS Travel/PCS MD32	TBD/ Various	MDA VA, MD, AI, CA, AZ, HI, AK.MA, NJ, FLM AR, UT, MH	0.000	0.000		1.651	Oct 2010	0.000		1.651	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		13.024		0.000		13.024			

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
Project Cost Totals	0.000	0.000		32.881		0.000		32.881			

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 0603890C: <i>Ballistic Missile Defense Enabling Programs</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>	15.256	13.569	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	28.825
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	15.256	13.569	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 0603890C: <i>Ballistic Missile Defense Enabling Programs</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
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	15.256	13.569	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
• 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

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	255.987	318.800	0.000	318.800	405.500	416.300	337.300	227.500	0	1,961.387

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT ZX40: <i>Program-Wide Support</i>
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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 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>
• 0604881C: <i>Aegis SM-3 BLOCK IIA CO-DEVELOPMENT</i>											
• 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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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD40: <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
MD40: <i>Program-Wide Support</i>	0.000	0.000	16.916	0.000	16.916	17.138	14.878	14.857	17.141	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11.

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> NA <i>FY 2010 Plans:</i> NA	0.000	0.000	16.916	0.000	16.916

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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 0603890C: <i>Ballistic Missile Defense Enabling Programs</i>	PROJECT MD40: <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
<i>FY 2011 Base Plans:</i> NA					
<i>FY 2011 OCO Plans:</i> NA					
Accomplishments/Planned Programs Subtotals	0.000	0.000	16.916	0.000	16.916

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
• 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
• 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

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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>
• 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
• 0603897C: <i>BMD HERCULES</i>	51.629	47.932	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	99.561
• 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
	0.000	201.323	121.735	0.000	121.735	111.100	113.101	116.114	119.172	0	782.545

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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 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>
• 0603913C: <i>ISRAELI COOPERATIVE</i>											
• 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
• 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

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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