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

|   |   |
|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |
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| COST (\$ in Millions)   | FY 2009<br>Actual | FY 2010<br>Estimate | FY 2011<br>Base<br>Estimate | FY 2011<br>OCO<br>Estimate | FY 2011<br>Total<br>Estimate | FY 2012<br>Estimate | FY 2013<br>Estimate | FY 2014<br>Estimate | FY 2015<br>Estimate | Cost To<br>Complete | Total<br>Cost |
|---|-------------------|---------------------|-----------------------------|----------------------------|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------|
| Total Program Element   | 275.174           | 334.734             | 342.625                     | 0.000                      | 342.625                      | 364.085             | 289.778             | 323.922             | 298.936             | Continuing          | Continuing    |
| BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i>                                    | 83.418            | 27.454              | 0.000                       | 0.000                      | 0.000                        | 0.000               | 0.000               | 0.000               | 0.000               | 0                   | 110.872       |
| CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i>                                    | 138.899           | 248.320             | 0.000                       | 0.000                      | 0.000                        | 0.000               | 0.000               | 0.000               | 0.000               | 0                   | 387.219       |
| WX01: <i>BC Capability Development</i>  | 0.000             | 0.772               | 0.000                       | 0.000                      | 0.000                        | 0.000               | 0.000               | 0.000               | 0.000               | 0                   | 0.772         |
| XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> | 42.465            | 46.200              | 0.000                       | 0.000                      | 0.000                        | 0.000               | 0.000               | 0.000               | 0.000               | 0                   | 88.665        |
| MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>             | 0.000             | 0.000               | 331.155                     | 0.000                      | 331.155                      | 350.771             | 280.359             | 313.766             | 288.453             | Continuing          | Continuing    |
| ZX40: <i>Program-Wide Support</i>   | 10.392            | 11.988              | 0.000                       | 0.000                      | 0.000                        | 0.000               | 0.000               | 0.000               | 0.000               | 0                   | 22.380        |
| MD40: <i>Program-Wide Support</i>   | 0.000             | 0.000               | 11.470                      | 0.000                      | 11.470                       | 13.314              | 9.419               | 10.156              | 10.483              | Continuing          | Continuing    |

**Note**  
In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Projects CX01 and XX01 for FY 2011 - FY 2015 are now captured in Project MD01. The content previously planned in Project WX01 FY 2011 - FY 2015 is now captured in Project MD25 (Program Element 0603175C).

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**

The mission of the Missile Defense Agency continues to be one of developing and fielding an integrated, layered 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. Potential adversaries are increasing Short-

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| <p>Range Ballistic Missile (SRBM), Medium-Range Ballistic Missile (MRBM), Intermediate-Range Ballistic Missile (IRBM), and Intercontinental Ballistic Missile (ICBM) inventories, even as they are developing more advanced and capable systems. Current trends indicate that adversary ballistic missile systems, with the integration of advanced liquid- or solid-propellant propulsion technologies, are becoming more mobile, survivable, reliable, accurate and capable of flying longer distances. To protect the United States, our deployed forces, and other critical assets from this growing threat requires a synchronized, layered defense.</p> <p>The Ballistic Missile Defense Command and Control, Battle Management, and Communications (C2BMC) Program establishes the System by linking together the external sensors and weapons of independent Elements into a layered missile defense system such that the whole is far more capable and robust than the sum of its parts -- thus increasing the footprint of the BMDS with greater performance and defensive coverage. The C2BMC enables the BMDS to manage complex threats -- near simultaneous enemy missile shots aimed at theater, regional, or homeland assets. The systems linked through C2BMC include Phased Array Tracking Radar Intercept on Target (PATRIOT), Terminal High Altitude Area Defense (THAAD), Aegis Ballistic Missile Defense (BMD), Ground Based Midcourse Defense (GMD); and sensors such as the Army/Navy/Transportable Radar Surveillance-2 (AN/TPY-2) radar, Sea-Based X-Band Radar (SBX), Space-Based Infrared System (SBIRS), and BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA).</p> <p>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 BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide the best sensor information about the enemy missiles location and track, and a more diverse and effective set of weapon options to be used by the Combatant Commander to defeat the attack; with 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 other Program Elements. These connections are referred to as interdependencies.</p> <p>The C2BMC Program provides: 1) the communications links and connectivity between BMDS Elements, 2) a battle management function that allows a shoot/look/shoot approach which maximizes BMDS effectiveness, while minimizing the number of weapons expended (it is important to note that C2BMC provides a battle management function; it does not have a fire control system), 3) control of the BMDS radars, taking data from multiple sensors tracking the same threat, and correlating it into one optimal track - that has sufficient Quality of Service (QoS) for BMDS Element's fire control, 4) real-time awareness of the battle as it unfolds to include interoperability with North Atlantic Treaty Organization (NATO), and 5) advanced battle planning capability which enables warfighters to place BMDS assets in ideal locations in anticipation of an upcoming battle.</p> |   |                            |

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| <p>The C2BMC Program has integrated six BMDS Elements (GMD, Aegis BMD, THAAD, SBIRS, Sensors, and PATRIOT) and Coalition Partners; is in 31 locations with 12 customers in 17 time zones; has deployed over 800 pieces of equipment and Satellite Communications (SATCOM) using three frequency bands; has stood up over 70 crew positions; trains over 700 operators, maintenance personnel, and testers per year; and is supported by over 48,000 miles of Defense Information Systems Agency (DISA) communication lines.</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, and 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 (provide a single engageable track of a threat, that has sufficient Quality of Service (QoS) -that is, sufficient data accuracy and low enough latency- for BMDS Element`s fire control, to be able to complete ballistic missile engagements, using 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.</p> <p>Each of these UMDFs is led by a single BMDS Element, with participation from the others, to ensure products do not duplicate work. C2BMC is at the heart of these UMDFs and enables integrated system performance of all BMDS Elements. It collects the information from all BMDS sensors, understands and considers all data errors/bias, correlates data between sensors, uses specific sensor discriminated data and fuses it between sensors, creates an engageable system track that has sufficient Quality of Service (QoS) for BMDS Element`s fire control, identifies the best pairing of sensor to shooter for optimal intercept, and quickly communicates information and direction to BMDS Elements and command elements world-wide. As a result, C2BMC leads the Correlation, System Track, Battle Management, and Communications UMDF teams.</p> <p>The C2BMC Program provides quality, safety, and mission assurance operations to ensure compliance with Agency requirements for design, test, manufacturing, quality, safety, and reliability.</p> <p>The BMD Digital Simulations Architecture (DSA) is the primary Modeling and Simulation (M&amp;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.</p> |   |                            |

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| <p>The DSA-performance architecture with the C2BMC Model (BCM) supports Performance Assessment (PA) events, which provide critical system level performance data relative to all elements, system engineers, M&amp;S developers, the Operational Test Agency (OTA) and Warfighters. The DSA-virtual architecture supports C2BMC and other BMDS Element baseline integration, training, and portions of ground testing and exercises.</p> <p>The BMD Single Stimulation Framework (SSF) utilizes Hardware-in-the-Loop (HWIL) assets to primarily support BMDS ground testing, pre and post flight test mission construction and reconstruction, and 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. The C2BMC Program supports the M&amp;S Program by providing HWIL representation 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>C2BMC provides the capabilities for leaders at multiple levels of command to see, assess, and react to ballistic missile threats. C2BMC capabilities are provided through four capability areas: BMD Planner, Situational Awareness, Global Engagement Manager (GEM), and BMD Communications Network.</p> <p>BMD Planner: The Planner provides warfighters the capability to explore the effectiveness of various defensive designs in order to plan the most effective defense by optimizing the location and mix/pairing of sensors and interceptors. The Planner is flexible enough to allow the warfighter to function in the three modes of activity: Deliberate Planning (24-36 months before a battle), Crisis Action Planning (hours or days before an attack, based on updated information), and Dynamic Planning (near real-time agility for changing situations). System models used in the Planner today include the GMD system, used to defend the U.S.; and the AN/TPY-2 radar, Aegis BMD, PATRIOT, and THAAD systems used to defend against theater missile attacks.</p> <p>Situational Awareness: This capability is used to turn detailed data into usable information that commanders can act on in the event of a missile defense threat. Situational Awareness information is provided by the Combatant Commands` - Command and Control (COCOM C2) screens (displays and decision aids). Situational Awareness display emphasizes a common ballistic missile picture and summary screens used at the Presidential level down to the operational level of command. The systems available today include an interface with the Ground Based Midcourse Defense (GMD) missile fire control system, Aegis BMD and PATRIOT via Link 16, sensor management control of the AN/TPY-2 radar, and a direct data connection to SBIRS information.</p> |   |                            |

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| <p>Global Engagement Manager (GEM): The GEM provides the first true BMDS battle management capability through C2BMC. GEM provides the foundation for various BMD Elements and external sensors and interceptors to work synergistically for optimal performance. The GEM will provide enhanced sensor management control of world-wide X-band radars, assign a specific sensor to track a specific threat, calculate the most likely track of an incoming missile, and then recommend the most effective weapon to target pairing, maximizing probability of hit/kill.</p> <p>BMD Communications Network: The BMD Communications Network ties together sensors (both BMDS radars and space sensors) and weapons systems via the Combatant Commands Command and Control screens and GEM, thereby enabling the National Command Authority and the commanders at the strategic, theater and tactical levels to optimally engage ballistic missile threats at any range, in any phase of flight, at any time including near simultaneous theater, regional and homeland attacks. The BMD Communications Network builds on existing and new global grid data and communications networks to provide a robust, end-to-end, high availability, operational communications network (COMNET) infrastructure that quickly and unambiguously shares information across the global BMDS. This sharing of information is performed securely with special emphasis on preventing cyber attack via a BMDS Network Operations and Security Center (BNOSC). Effective networking management and operations relies on the ability to manage, coordinate, and integrate a wide variety of equipment platforms, interfaces with other DoD communications systems, existing/evolving information standards and capabilities, and adherence to DoD Information Assurance Certification and Accreditation Process (DIACAP). Defense Information Systems Agency (DISA) services are also highly leveraged in providing world-wide communications.</p> <p>The C2BMC Program employs a robust incremental development program to deliver enhanced and new capabilities to the warfighter. Each incremental delivery (identified using the generic nomenclature of Spiral x.# (e.g., Spiral 6.4) includes the software, hardware, and network connectivity needed to operate the BMDS.</p> <p>The C2BMC Program includes support for and analysis of BMDS-level wargames and tests with fielded capabilities. The average timeframe to develop, test, and field the next increment of capability is 24-36 months with new capability fielded every two years on average. Therefore multiple capability increments are in staggered stages of development at any time. The key test event for development is start of Cycle 2, Simulation-Based Verification, when software completes internal C2BMC development and begins testing with other BMDS Elements. Completion of Cycle 5, Site Activation Testing, coupled with successful participation in BMDS ground test campaigns, signals delivery of fully functioning operational software.</p> |   |                            |

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The C2BMC Program provides the program office personnel to manage the BMDS Concurrent Test Training and Operations (CTTO) activities. CTTO is responsible for providing warfighters the means to train using high-fidelity simulations of realistic scenarios while using operational (deployed) equipment and networks. The key is to safely separate training events from real-world operations (i.e., allowing the warfighter to train on the same equipment they will use in a real battle).

The C2BMC Program provides the program office personnel to manage the development and implementation of Distributed Multi-Echelon Training System (DMETS), a capability which enables warfighters to train where they fight by generating realistic, interactive, threat scenarios that address all phases of the kill chain and varied sensor/shooter combinations. The system allows for scalable training of the BMDS using a parallel architecture either physically or logically separated from the operational one.

To expand capability to defend allies & deployed forces from short- to medium-range threats in one region/theater the C2BMC Program will:

- Expand BMD Communications Network
- Enhanced deliberative/crisis action planning
- Enhanced situational awareness to perform command and control at Combatant Commands (COCOMs) and the National Military Command Center (NMCC)
- Initial fielding of the Global Engagement Manager (GEM) capability at the Kenney Air Operations Center (Hickam Air Force Base, Hawaii)
- Improved system reliability and availability to support test and operations
- Updated C2BMC model (BCM) a key component of the BMD Distributed Simulation Architecture, continuously validated by Critical Engagement Conditions (CECs) for system-level performance assessments to verify models and simulations
- Development of Unifying Missile Defense Functions (UMDF) capabilities

To expand defense of the United States to include limited Iranian long-range and theater threats, C2BMC goals are to deliver:

- Expand BMD Communications Network
- BMD Planner and Situational Awareness capability that fully incorporates intelligence information
- Initial interfaces between weapons and sensors compatible with DoD network-centric service-oriented architecture
- Northern Command (NORTHCOM) and European Command (EUCOM) expansion of Global Engagement Manager (GEM) coordination
- Updated C2BMC model (BCM) a key component of the BMD Distributed Simulation Architecture, continuously validated by Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs)\*\* for system-level performance assessments to verify models and simulations
- Development of Unifying Missile Defense Functions (UMDF) capabilities

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| <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>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 with 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 our 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.</p> <p>Sustainment</p> <p>Sustain worldwide C2BMC operational capability 24 hours a day, 7 days a week, 365 days a year-- on site personnel supporting 31 locations, across 17 time zones, and over 800 pieces of equipment. Additional sites are planned to be added in FY 2010 including the Navy Maritime Operating Center in Bahrain.</p> <p>The 31 locations supported are:</p> <p>U.S. Forces Korea (USFK); U.S. Forces Japan (USFJ); Shariki; Pacific Command (PACOM) at Camp Smith; Air Operations Center (AOC) at Hickam Air Force Base (AFB); Defense Information Systems Agency Defense Enterprising Computing Center (DISA DECC) Pacific; U.S. Pacific Fleet (PACFLT); Pacific Missile Range Facility (PMRF); Fort Greely, Alaska (FGA); Alaska Command (ALCOM); Vandenberg AFB; 32nd Army Air and Missile Defense Command (AAMDC); Cheyenne Mountain Air Force Station (CMAFS); Peterson AFB; Missile Defense Integration and Operations Center (MDIOC) at Shriever AFB; Huntsville, AL (Von Braun II); Central Command (CENTCOM), Tampa, FL; South Carolina National Guard (SCNG); Pentagon; White House; MDA; Missile Defense National Team (MDNT); Navy Europe (NAVEUR); Israel; Stuttgart; Ramstein Air Base (AB); Patch and Rhine Ord Barracks; and the United Kingdom (4 sites)</p> <p>Provide 24 hours a day, 7 days a week, 365 days a year help desk (Control Center at the MDIOC) for real-time issue resolution</p> <p>Develop curriculum and provide C2BMC operator, maintenance personnel, and tester training on C2BMC equipment and capabilities (approximately 700 people per year)</p> <p>Lease communication lines via Defense Information Systems Agency (DISA) for global BMD Network Communications</p> |   |                            |

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Capability Development

Assess feasibility and establish requirements for beyond line of sight launch-on / engage-on network capability

**B. Program Change Summary (\$ in Millions)**

|                                     | <b><u>FY 2009</u></b> | <b><u>FY 2010</u></b> | <b><u>FY 2011 Base</u></b> | <b><u>FY 2011 OCO</u></b> | <b><u>FY 2011 Total</u></b> |
|-------------------------------------|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget         | 288.287               | 340.014               | 0.000                      | 0.000                     | 0.000                       |
| Current President's Budget          | 275.174               | 334.734               | 342.625                    | 0.000                     | 342.625                     |
| Total Adjustments                   | -13.113               | -5.280                | 342.625                    | 0.000                     | 342.625                     |
| • Congressional General Reductions  |                       | 0.000                 |                            |                           |                             |
| • Congressional Directed Reductions |                       | -5.280                |                            |                           |                             |
| • Congressional Rescissions         | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Adds                |                       | 0.000                 |                            |                           |                             |
| • Congressional Directed Transfers  |                       | 0.000                 |                            |                           |                             |
| • Reprogrammings                    | -8.843                | 0.000                 |                            |                           |                             |
| • SBIR/STTR Transfer                | -4.270                | 0.000                 |                            |                           |                             |
| • Other Adjustment Detail           | 0.000                 | 0.000                 | 342.625                    | 0.000                     | 342.625                     |

**Change Summary Explanation**

FY 2009 decrease of \$13.113 million reflects SBIR/STTR Transfers and MDA adjustments

FY 2010 decrease of \$5.280 million reflects Congressional directed reductions

No FY 2011 data provided in PB10.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency  |                       |                         |                              |   |                               |                         |                         | <b>DATE:</b> February 2010   |                         |                         |                   |
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| <b>COST (\$ in Millions)</b>  | <b>FY 2009 Actual</b> | <b>FY 2010 Estimate</b> | <b>FY 2011 Base Estimate</b> | <b>FY 2011 OCO Estimate</b>                                   | <b>FY 2011 Total Estimate</b> | <b>FY 2012 Estimate</b> | <b>FY 2013 Estimate</b> | <b>FY 2014 Estimate</b>  | <b>FY 2015 Estimate</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
| BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i>  | 83.418                | 27.454                  | 0.000                        | 0.000   | 0.000                         | 0.000                   | 0.000                   | 0.000  | 0.000                   | 0                       | 110.872           |
| Quantity of RDT&E Articles  | 0                     | 1                       | 0                            | 0   | 0                             | 0                       | 0                       | 0  | 0                       |                         |                   |

**Note**

RDT&E Articles are defined as major C2BMC capability increments (identified as a specific Spiral) which are fielded at multiple locations including Combatant Commands and other operational sites. Budget Project BX01 includes one RDT&E Article, Spiral 6.4C, which is planned for operational fielding in FY 2010. This Budget Project completes in FY 2010.

To accelerate the fielding of capabilities to the warfighter, the C2BMC Program divided Spiral 6.4 capabilities into two increments for testing and fielding purposes. The two spirals are identified as Spiral 6.4C and 6.4D. All capabilities are initially fielded on the Parallel Staging Network (PSN) to characterize system performance before the next incremental spiral is added. Base Spiral 6.4 capabilities and the ability to manage multiple radars within a region are developed and tested in Spiral 6.4C. These capabilities will be validated during FY 2010 BMDS ground tests prior to operational declaration. Engineering and development of Spiral 6.4D are described in Budget Project CX01.

The key test event for development is the start of Cycle 2, Simulation-Based Verification, when software completes internal C2BMC development and begins testing with other BMDS Elements. Completion of Cycle 5, Site Activation Testing, coupled with successful participation in BMDS ground test campaigns, signals delivery of fully functioning operational software.

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

Today, the center of gravity for integrated Ballistic Missile Defense System (BMDS) is with C2BMC at the Combatant Command (COCOM) Headquarters, where Ballistic Missile Defense (BMD) mission planning, situational awareness, and decisions aids are focused. All data processing is performed at Strategic Command (STRATCOM), Northern Command (NORTHCOM), Pacific Command (PACOM), and European Command (EUCOM) headquarters. Adding CENTCOM capabilities to the BMDS is in the planning stages. Users of the system are either collocated with, or directly connected to the equipment suites at these COCOMs. As the system evolves, the center of gravity will shift from the COCOMs to the Air Operations Centers (AOCs) and supporting Service Components, where real-time, automated battle management will be introduced. While the Area Air Defense Commander's staff focuses on fighting the battle, senior leaders at COCOM Headquarters will be able to watch the battle unfold and guide decisions using C2BMC-provided decision aids. Together, these separate capabilities enable the warfighter to prioritize theater, regional, and homeland defense missions. To accomplish this shift in the center of gravity and meet the C2BMC mission objective to manage all sensors and

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i> |
| <p>all weapons, to defeat any threat, in any phase of flight, the C2BMC Program of work includes concentrated effort on developing complementary, networked, C2BMC system capabilities (i.e., global BMD planning and situational awareness at the Combatant Commands Headquarters and Global Engagement Manager (GEM) at the Air Operations Center for initial deployment by the end of FY 2010).</p> <p>To defend allies and deployed forces from short- to medium-range threats in one region/theater, C2BMC goals are to deliver:</p> <ul style="list-style-type: none"><li>Expand BMDS Communications Network</li><li>Improved C2BMC system reliability and availability</li><li>Initial Global Engagement Manager (GEM) capability (automated sensor management, track downselect/forwarding on Link-16, and operator track-level management) at the Kenney Headquarters Air Operations Center which supports multiple AN/TPY-2 radars</li><li>Enhanced BMD Planner with better user displays, flexible defense designs, and faster analysis</li><li>Enhanced situational awareness in support of command and control decisions at the Combatant Command (COCOM) Headquarters with additional Ground Based Midcourse Defense (GMD) essential elements of information and more informative visual representations</li><li>Enhanced network monitoring and Secret Internet Protocol Router Network (SIPRNET) information assurance</li><li>Updated C2BMC model (BCM) supporting the BMD Distributed Simulation Architecture, continuously validated by Critical Engagement Conditions (CECs) and Empirical Measurement Events (EMEs)** for system-level performance assessments to verify models and simulations</li><li>Support for development of Unifying Missile Defense Functions (UMDFs) capabilities</li><li>Robust secure Information Assurance (IA) architecture</li></ul> <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><b>C2BMC ELEMENT</b></p> <p>The BMD Planner will be improved to include updated representations of the capabilities of each BMDS weapon and sensor and Concept of Operations (CONOPS) to increase fidelity in all planning phases. Also included is an initial merging of the BMD Planner and Joint Engine for Defense Analysis (JEDA) graphical user interface (previously two separately running programs) with Defended Area Analysis to provide a more rapid view of how well a particular plan performs its mission; thus, allowing the analysis of more options in a shorter time.</p> <p>Situational Awareness improvements include enhancements such as inclusion of additional battlespace information to include new tabular and graphical displays of early warning and track information and common threat track identification across BMDS Elements to eliminate operator confusion. Improvements also include additional GMD essential elements of information. Additionally, the C2BMC Program is incorporating additional Information Assurance (IA) controls (via a web proxy</p> |   |  |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b>  | <b>R-1 ITEM NOMENCLATURE</b>  | <b>PROJECT</b>   |
|---|-------------------------------|--|
| 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0603896C: <i>BMD C2BMC</i> | BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i> |

architecture) to protect its applications and hardware from external threats across the Secret Internet Protocol Router Network (SIPRNET). Planner and situational awareness improvements functionalities are included in BMDS Integrated Build C and D approved content.

The first deployment of Global Engagement Manager (GEM) will improve warfighter ability by optimizing sensor-weapons pairing and increasing AN/TPY-2 control and effectiveness. At the end of FY 2010, GEM will have the primary task of managing multiple AN/TPY-2 radars in a region or theater for threat acquisition and discrimination, correlating that data, and publishing it on Link-16 to other BMD elements, functionalities included in BMDS Integrated Build D approved content. It will also allow the operator the ability to modify the execution of the BMDS fight based on real-time battlefield learning and provide the ability to manipulate individual threat tracks based on other intelligence. GEM also delivers battle management capabilities for the following Unifying Missile Defense Functions (UMDFs): correlation of multiple sensor tracks for a given target, as seen by different sensors, for common track identification (Multi-Hypothesis Correlator/Ballistic Missile Launch Event Association-Global Vision (MHC/BLEA-GV)); initial capability to identify the real threat (i.e., discrimination) by providing the conduit for AN/TPY-2 radar discrimination data to the GMD for more accurate fire control solutions; and initial ability to process multiple sensor inputs into a single engageable system track that has sufficient Quality of Service (QoS) -that is, sufficient data accuracy and low enough latency- for Element`s fire control to enable successful ballistic missile engagements (initially, for internal C2BMC consumption only).

The BMD Communications Network portion of C2BMC will provide initial network enterprise capabilities, starting with centralized detailed network performance monitoring within the BMDS Network Operations and Security Center (BNOSC) and cryptographic device management. This ensures truly integrated network operations (enterprise management, network defense, and situational awareness), eliminating seams across the global communications infrastructure and optimizing information flow based on the global vice regional Ballistic Missile Defense (BMD) mission. The centralized network operations approach reduces the global operations & sustainment (O&S) footprint, consolidating resources and reducing operations and maintenance (O&M) costs. The BNOSC establishes centralized network defense, allowing for a consolidated approach to defending the network, identifying network attack trends, and initiating a coordinated response across the entire BMD Communications Network. Centralized cryptographic device management ensures planned and unplanned crypto changes are tightly coordinated across the Agency Elements and COCOMs, reducing network downtime by minimizing outages caused by cross-organization coordination challenges. The BNOSC will evolve to full network monitoring to ensure messages and communications are properly routed to avoid bottlenecks. Additionally, BMDS Communications System Complex-Transportable (BCSC-T), High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN), and C2BMC Deployable Interface Node (CDIN) communications capability will continue to be developed, constructed, and fielded concurrent with the AN/TPY-2 to connect it to the BMDS from deployed locations.

Matured capabilities will be included in Spiral 6.4, and then delivered to the field for concurrent development testing and operational use.

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

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| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>  |   |  |                |                            |                        |                          |
|   |   | <b>FY 2009</b>   | <b>FY 2010</b> | <b>FY 2011<br/>Base</b>    | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> |
| <p>Update C2BMC model (BCM) as part of the BMD Distributed Simulation Architecture, validate by critical engagement conditions (CECs) for system-level performance assessment to verify models and simulations ; ;<br/>Field Spiral 6.4C capability to declare operational<br/>Continue development and acquisition of CDINs (C2BMC Element will fund software capability and project management; Sensors Element will fund hardware, installation, and checkout)</p> <p><i>FY 2011 Base Plans:</i><br/>N/A</p> <p><i>FY 2011 OCO Plans:</i><br/>NA</p>   |   |  |                |                            |                        |                          |
| <p>C2BMC Site Activation and Fielding<br/>See Description Below</p> <p><i>FY 2009 Accomplishments:</i><br/>Site Activation efforts continue to address the fielding and upgrade of C2BMC associated hardware and software (Suites, Enterprise Work Stations (EWS), BMD Planners, web browsers, and communications equipment) which enable the warfighter to plan, see, and manage the ballistic missile defense battle.</p> <p>Acquired and installed Spiral 6.4C Combatant Command (COCOM) hardware and software at Northern Command (NORTHCOM), Strategic Command (STRATCOM), and Pacific Command (PACOM)<br/>Acquired and installed PACOM Test Gateway<br/>Acquired and installed AN/TPY-2 Spiral 6.4C hardware upgrades</p> |   | 10.223   | 0.000          | 0.000                      | 0.000                  | 0.000                    |

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| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>  |   |  |                |                            |                        |                          |
|   |   | <b>FY 2009</b>   | <b>FY 2010</b> | <b>FY 2011<br/>Base</b>    | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> |
| <p>Acquired and installed Spiral 6.4C Global Engagement Manager (GEM) hardware and software at Kenney Headquarters</p> <p>Acquired and installed Ft. Greely, AK (FGA) Spiral 6.4C hardware</p> <p>Acquired and installed C2BMC Deployable Interface Node (CDIN) hardware and software at Pacific Missile Range Facility (PMRF) (C2BMC Element funded software capability and project management; Sensors Element funded hardware, installation, and checkout)</p> <p>Updated production drawings and installation procedures</p> <p>Acquired and installed Enterprise Work Stations, web browsers, and Planners</p> <p>Acquired and installed training suite at European Command (EUCOM)</p> <p>Deployed and supported communications capabilities to Ramstein and Israel for the Contingency Architecture Activation Team (CAAT) in cooperation with the Sensors Element (C2BMC Element funded software capability and project management; Sensors Element funded hardware, installation, and checkout)</p> <p><i>FY 2010 Plans:</i><br/>N/A</p> <p><i>FY 2011 Base Plans:</i><br/>N/A</p> <p><i>FY 2011 OCO Plans:</i><br/>NA</p> |   |  |                |                            |                        |                          |
| Accomplishments/Planned Programs Subtotals  |   | 83.418   | 27.454         | 0.000                      | 0.000                  | 0.000                    |

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

| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • 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 &amp; 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            |
| • 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            |
|   | 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<br/>Base</u> | <u>FY 2011<br/>OCO</u> | <u>FY 2011<br/>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To<br/>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • 0603898C: <i>BMD JOINT<br/>WARFIGHTER SUPPORT</i>                                    |                |                |                         |                        |                          |                |                |                |                |                             |                   |
| • 0603901C: <i>DIRECTED ENERGY<br/>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<br/>INTEGRATION &amp; OPERATIONS<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>INFRARED (ABIR)</i>  | 0.000          | 0.000          | 111.671                 | 0.000                  | 111.671                  | 103.636        | 123.591        | 103.668        | 58.773         | 0                           | 501.339           |
|  | 124.788        | 0.000          | 0.000                   | 0.000                  | 0.000                    | 0.000          | 0.000          | 0.000          | 0.000          | 0                           | 124.788           |

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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><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 0605502C: <i>Small Business Innovative Research BMDO</i> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
| • 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 Command and Control, Battle Management, and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability-based acquisition strategy emphasizing testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transaction Agreement contract vehicle. Major team members to Lockheed are Northrop Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

MDA will transition from the existing legacy, project-oriented Systems Engineering and Technical Assistance (SETA) contractor construct to an enterprise-wide Advisory and Assistance (A&AS) approach to support the Ballistic Missile Defense System (BMDS) mission. The objectives are to implement national engineering and support services for the BMD 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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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC 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          |                  |            |                          |
| Spiral 6.4 C2BMC Communications Network C2BMC Hardware (HW)/ Software(SW) Development/Integration & Test (I&T) BX01 | SS/CPAF                | Lockheed Martin Team Colorado Springs, CO | 24.154                 | 8.812   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC HW/ SW Development/I&T BX01   | SS/CPAF                | Lockheed Martin Team Huntsville, AL       | 3.660                  | 1.335   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC Product Engineering & Development BX01                                | SS/CPAF                | Lockheed Martin Team Arlington, VA        | 45.381                 | 16.556  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC Network BX01  | Various/<br>Various    | Services, DISA, Agencies<br>-             | 0.000                  | 0.751   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| C2BMC Site Activation and Fielding Suites and Communications Gateways BX01  | SS/CPAF                | Lockheed Martin Team<br>-                 | 10.223                 | 0.000   |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>   |                        |   | 83.418                 | 27.454  |            | 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

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i> |
|---|---|--|

**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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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 |  |
|----------------------------|------------------------|---------|--|--------------|--|-------------|--|---------------|------------------|------------|--------------------------|--|
|                            |                        |         |  |              |  |             |  |               |                  |            |                          |  |
| <b>Project Cost Totals</b> | 83.418                 | 27.454  |  | 0.000        |  | 0.000       |  | 0.000         |                  |            |                          |  |

**Remarks**  
NA

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC 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 |
| Complete Spiral 6.4 HW Installations |         | ■ |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Spiral 6.4C Cycle 2 Testing          |         |   | ■ | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Spiral 6.4C Cycle 5 Testing          |         |   |   | ■ |         | ■ |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2011 Missile Defense Agency   |   | <b>DATE:</b> February 2010   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>BX01: <i>Ballistic Missile Defense C2BMC Block 2.0</i> |

Schedule Details

| Event                                | Start   |      | End     |      |
|--------------------------------------|---------|------|---------|------|
|                                      | Quarter | Year | Quarter | Year |
| Complete Spiral 6.4 HW Installations | 2       | 2009 | 2       | 2009 |
| Spiral 6.4C Cycle 2 Testing          | 3       | 2009 | 4       | 2009 |
| Spiral 6.4C Cycle 5 Testing          | 4       | 2009 | 1       | 2010 |

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

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC 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 |
|--|----------------|------------------|-----------------------|----------------------|------------------------|------------------|------------------|------------------|------------------|------------------|------------|
| CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> | 138.899        | 248.320          | 0.000                 | 0.000                | 0.000                  | 0.000            | 0.000            | 0.000            | 0.000            | 0                | 387.219    |
| 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 CX01 for FY 2011 - FY 2015 is now captured in Project MD01.

RDT&E Articles are defined as major C2BMC capability increments (identified as a specific Spiral) which are fielded at multiple locations including Combatant Commands and other operational sites. Budget Project CX01 initiates the engineering and development effort for RDT&E Article Spiral 6.4D. CX01 also includes the initial evaluation of future Spiral 8.2 architecture. Spiral 6.4D will be completed in Budget Project MD01.

As BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA) has already been developed as a prototype in the C2BMC X-Lab, it was deemed feasible to deploy it operationally on the Spiral 6.4 hardware architecture. Therefore, BOA capability and other capabilities deemed acceptable to run on the Spiral 6.4 hardware architecture will be incrementally developed, tested, and fielded in Spiral 6.4D. This capability is included in BMDS Integrated Build D approved content.

The key test event for development is start of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins testing with other BMDS Elements. Completion of Cycle 5, Site Activation Testing, coupled with successful participation in BMDS ground test campaigns, signals delivery of fully functioning operational software.

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

Based on the Missile Defense Agency's defined architectures and system specifications, the Command and Control, Battle Management and Communications (C2BMC) Program will provide the warfighter the capability to plan the Ballistic Missile Defense (BMD) fight while concurrently tracking all potential ballistic missile threats, and pairing any sensor with any shooter to defeat ballistic missile threats at any range, in any phase, in all theaters. The C2BMC Program will also work to increase coalition partners' capabilities.

To expand defense of the United States to include limited Iranian long-range threats, C2BMC goals are to deliver:

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
| <p>Fully integrated BMD Planner and situational awareness displays with integrated intelligence information and defended asset priority schemes<br/>Initial interfaces between weapons and sensors compatible with DoD network-centric service-oriented architecture - network enabled command and control<br/>Northern Command (NORTHCOM) and European Command (EUCOM) expansion of Global Engagement Manager (GEM)<br/>Incorporation of BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA) sensor data for radar cueing<br/>Update C2BMC model (BCM), continuously validated by Critical Engagement Conditions (CECs), for system-level performance assessment to verify models and simulations<br/>Improved network monitoring and computer network defense at the BMDS Network Operations and Security Center (BNOSC)<br/>Incorporate emerging Enhanced C2BMC advanced technologies into the C2BMC architecture<br/>Robust secure Information Assurance (IA) architecture</p> <p><b>C2BMC ELEMENT</b></p> <p>The BMD Planner will evolve to a net centric capability and add integrated air and missile defense capability. The system will be designed to interface with the service components and their evolving systems and enable cross planning between the Combatant Commanders. The Planner will continue to initialize the Global Engagement Manager (GEM) capability as it comes on line and will continue to be the initialization source for situational awareness.</p> <p>Situational Awareness (SA) improvements include the migration to network centric command and control which is tied to evolving Department of Defense command and control architectures. Other improvements include a Regional Summary Screen combining Combatant Command (COCOM) and GEM information, enhanced Protection Capability (PROCAP) to give the warfighter an assessment of how the BMDS architecture is protecting a specific defended area by a display of individual weapon system engagements and information coordination with updates of command authority decision information (Essential Elements of Information), display of debris fields (consequence management) based on Element provided data. The result will be an integrated common operating picture across the Combatant Commands. C2BMC will evolve SA capability on network enabled command and control to reduce hardware footprint and expand SA to additional users.</p> <p>C2BMC battle management, via the GEM, delivers Common X-Band radar (AN/TPY-2 and Sea-Based X-Band) sensor control and capabilities for the following Unifying Missile Defense Functions (UMDFs), which are included in BMDS Integrated Build D approved content.</p> <p>Improved threat/object correlation, by accounting for sensor bias and threat features to calculate a common threat track from multiple sensors, incorporation of BMDS Overhead Non-imaging Infra-Red (OPIR) Architecture (BOA) and Space Based Infra-Red System (SBIRS) (Increment 2) sensor data for improved radar cueing, and improved engageable system threat tracks, that has sufficient Quality of Service (QoS) -that is, sufficient data accuracy and low enough latency- for BMDS Element's fire control to enable successful ballistic missile engagements, for regional elements via Link-16 and EHF (e.g., Terminal High Altitude Area Defense (THAAD) and Aegis BMD) and Ground Based Midcourse Defense (GMD) Fire Control (GFC)</p> |   |  |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency   |   | <b>DATE:</b> February 2010   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
| <p>Integrated BMDS system discrimination via data fusion<br/>Sensor registration to assess the quality of radar data received in the BMDS<br/>System track generation and publishing to all BMDS Elements using multiple (geographically filterable) sensors, with an ability to create a Target Object Map for use in the GMD interceptor end-game<br/>Sensor management and weapons engagement coordination aids to direct the BMDS fight and make efficient use of limited inventory<br/>Engagement direction with sensor-weapon system target pairing</p> <p>BMDS battle management will operate in two regions as well as across regions while providing global situational awareness.</p> <p>The BMD Communications Network portion of C2BMC includes upgrades to the Parallel Staging Network, a dedicated Secret Internet Protocol Router Network (SIPRNET) point-of-presence for greater network service and security, computer network defense, and continued improvement in network monitoring for information assurance via the BMDS Network Operations and Security (BNOSC). Development, construction and integration of the BMDS Communications System Complex-Transportable (BCSC-T), High Mobility Multipurpose Wheeled Vehicle (HMMWV) Based Communications Node (HBCN), and C2BMC Deployable Interface Node (CDIN) also continue. The BCSC-T is a relocatable standardized communication complex. The HBCN and CDIN are both a rapidly deployable standardized communication complex. The BCSC-T, CDIN, and HBCN provide terrestrial communication control functionalities as well as satellite communications and power supply system.</p> <p>Common threat engineering efforts begin in FY 2010. Threat engineering produces common and consistent adversary trajectory and signature data and directly supports the development of BMD System architecture, BMD Specification, and execution of the Integrated Master Test Plan (IMTP). These BMDS common threat data are updated to reflect the latest intelligence community assessments of adversary capabilities and are contained in the Adversary Data Packages (ADP) for BMDS Builds and drives BMDS ground tests, flight tests, digital simulation, and pre- and post-mission analysis activities.</p> <p>Matured capability will be included in Spirals 6.4D and then delivered to the field for concurrent development testing and operational use.</p> <p><b>SITE ACTIVATION</b></p> <p>C2BMC capabilities (hardware and software) will be deployed to Northern Command (NORTHCOM), Strategic Command (STRATCOM), Pacific Command (PACOM), European Command (EUCOM), and Central Command (CENTCOM) with existing sites receiving upgrades as needed. A Global Engagement Manager (GEM) suite will be deployed in EUCOM with back-up suite added. Deployment to these Combatant Commands continues to expand the BMDS on a global scale, providing increased protection to the U.S., and its friends and Allies. Current capability will expand with numerous BMD Planner, web browser, and Enterprise Workstation installations per warfighter requirements. Site Activation also includes participation in planning for future BMDS operations and site installations.</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>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

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

|   | FY 2009 | FY 2010 | FY 2011<br>Base | FY 2011<br>OCO | FY 2011<br>Total |
|---|---------|---------|-----------------|----------------|------------------|
| <p>Spiral 6.4 C2BMC Communications Network</p> <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i><br/>The C2BMC Program accomplishes objectives by integrating work across four capability areas: BMD Planner, Situational Awareness, Global Engagement Manager (GEM), and BMD Communications Network, so mature capabilities are integrated and incrementally delivered to the warfighter. Spirals 6.4D and 8.2 are planned in Budget Project CX01 and are included in BMDS Integrated Build D approved content.</p> <p>Initiated engineering of BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA) sensor data into operational C2BMC sensor management schema<br/>Initiated Spiral 6.4D application and network engineering<br/>Initiated Spiral 6.4D BMD Planner, Situational Awareness, Global Engagement Manager (GEM), and BMD Communications Network software development, coding, and integration<br/>Initiated evaluation of future ;Spiral 8.2 architectures<br/>Continued maturation and integration of U.S. BMDS with North Atlantic Treaty Organization (NATO) Active Layered Theater Ballistic Missile Defense (ALTBMD)<br/>Incorporated Command and Control Integrated Air and Missile Defense XML Schema (CIXS) standard in C2BMC architecture to ensure interoperability across the Services and NATO<br/>Participated with other BMDS Elements in transitioning GMD Communications Network (GCN) to Defense Information System Network (DISN)<br/>Identified risks, proposed mitigation strategies, and shared knowledge across programs to gain efficiencies across MDA programs</p> | 138.899 | 222.440 | 0.000           | 0.000          | 0.000            |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency  |   |  |                | <b>DATE:</b> February 2010 |                    |                      |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |                |                            |                    |                      |
| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>  |   |  |                |                            |                    |                      |
|   |   | <b>FY 2009</b>   | <b>FY 2010</b> | <b>FY 2011 Base</b>        | <b>FY 2011 OCO</b> | <b>FY 2011 Total</b> |
| <p>Continue incorporating Command and Control Integrated Air and Missile Defense XML Schema (CIXS) into C2BMC architecture for Services and NATO situational awareness interoperability</p> <p>Continue the upgrade of DOD teleports to enhance satellite communication (SATCOM) connectivity (C2BMC Element funds software capability and project management; Sensors Element funds hardware, installation, and checkout)</p> <p>Continue design and development of Protected Antijam/Antiscintillation Net-Centric System (PAAWNS) to increase bandwidth by a factor of ten (C2BMC Element funds software capability and project management; Sensors Element funds hardware, installation, and checkout)</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 IMTP, including Flight Tests, Ground Tests (GTX-04b, GTX-04c), BMDS Performance Assessment (PA-09, PA-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 Specification updates and all phases of Phased Adaptive Architecture (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, AN/TPY-2, and C2BMC</p> <p>Develop threat data for special projects</p> <p>Validate BMDS test targets are threat representative (IFTM-03, FTG-06, FTT-11, FTT-12)</p> <p><i>FY 2011 Base Plans:</i><br/>FY 2011 Plans are in Budget Project MD01</p> <p><i>FY 2011 OCO Plans:</i><br/>NA</p> |   |  |                |                            |                    |                      |
| Site Activation and Fielding  |   | 0.000  | 25.880         | 0.000                      | 0.000              | 0.000                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency   |   |  |                | <b>DATE:</b> February 2010 |                        |                          |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |                |                            |                        |                          |
| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>   |   |  |                |                            |                        |                          |
|  |   | <b>FY 2009</b>   | <b>FY 2010</b> | <b>FY 2011<br/>Base</b>    | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> |
| <p>See Description Below</p> <p><i>FY 2009 Accomplishments:</i><br/>NA</p> <p><i>FY 2010 Plans:</i><br/>Site activation efforts will continue to address the fielding and upgrade of C2BMC associated hardware and software (COCOM suites, Global Engagement Manager suites, Enterprise Work Stations (EWS), web browsers, BMD Planners and communications equipment) which enable the warfighter to plan, see, and manage the ballistic missile defense battle.</p> <p>Acquire and install Spiral 6.4D Combatant Command (COCOM) hardware on Parallel Staging Networks (PSNs) at Northern Command (NORTHCOM), Strategic Command (STRATCOM), and Pacific Command (PACOM)<br/>Update production drawings and installation procedures<br/>Acquire and install Enterprise Work Stations, Web Browsers, and Planners<br/>Initial network enabled capability installation at Combatant Commands (COCOMS)<br/>Deploy CDINs to support testing and operations (AN/TPY-2 and THAAD) (C2BMC Element funds software capability and project management; Sensors Element funds hardware, installation, and checkout)<br/>Field NORTHCOM GEM which is the back-up for the GEM at PACOM</p> <p><i>FY 2011 Base Plans:</i><br/>FY 2011 Plans are in Budget Project MD01</p> <p><i>FY 2011 OCO Plans:</i><br/>NA</p> |   |  |                |                            |                        |                          |
| <b>Accomplishments/Planned Programs Subtotals</b>  |   | 138.899  | 248.320        | 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

|   |   |  |
|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

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

| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • 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 &amp; 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            |
| • 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            |
|   | 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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|---|----------------|----------------|-------------------------|---|--------------------------|----------------|----------------|--|----------------|-----------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification: PB 2011 Missile Defense Agency</b>  |                |                |                         |   |                          |                |                |  |                | <b>DATE:</b> February 2010  |                   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                |                |                         | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |                          |                |                | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |                |                             |                   |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |                |                |                         |   |                          |                |                |  |                |                             |                   |
| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b>  | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b> | <b>FY 2014</b>   | <b>FY 2015</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • 0603898C: <i>BMD JOINT<br/>WARFIGHTER SUPPORT</i>   |                |                |                         |   |                          |                |                |  |                |                             |                   |
| • 0603901C: <i>DIRECTED ENERGY<br/>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<br/>INTEGRATION &amp; OPERATIONS<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>INFRARED (ABIR)</i>   | 0.000          | 0.000          | 111.671                 | 0.000   | 111.671                  | 103.636        | 123.591        | 103.668  | 58.773         | 0                           | 501.339           |
|   | 124.788        | 0.000          | 0.000                   | 0.000   | 0.000                    | 0.000          | 0.000          | 0.000  | 0.000          | 0                           | 124.788           |

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

|   |   |  |
|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011<br/>Base</u> | <u>FY 2011<br/>OCO</u> | <u>FY 2011<br/>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To<br/>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • 0605502C: <i>Small Business Innovative Research BMDO</i> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
| • 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 Command and Control, Battle Management, and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ends 1 Q FY 2012. A follow-on contracting strategy will be developed in FY 2010. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

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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|---|--|--|--|--|---|--|--|--|--|--|--|--|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2011 Missile Defense Agency</b>   |  |  |  |  |   |  |  |  |  | <b>DATE:</b> February 2010   |  |  |  |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |  |  |  |  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |  |  |  |  | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |  |  |  |

**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          |                  |            |                          |
| Spiral 6.4 C2BMC Communications Network C2BMC Hardware(HW)/ Software(SW) Development, Integration & Test (I&T) CX01 | SS/CPAF                | Lockheed Martin Team Colorado Springs, CO                | 21.866                 | 47.855  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC HW/ SW Development, I&T CX01  | SS/CPAF                | Lockheed Martin Team Huntsville, AL                      | 3.313                  | 7.251   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC Product Engineering & Development CX01                                | SS/CPAF                | Lockheed Martin Team Arlington, VA                       | 41.083                 | 89.909  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network Contract Support Services (CSS) CX01  | SS/FFP                 | Cobham Analytic Solution (formerly SPARTA) Arlington, VA | 26.139                 | 19.843  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network Federally Funded Research Development Centers CX01                          | SS/CPAF                | MITRE, IDA, ORNL, MIT/LL Arlington, VA                   | 14.971                 | 11.215  | 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

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

**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          |                  |            |                          |
| Spiral 6.4 C2BMC Communications Network MDA Civilian, Travel, and PCS CX01 | Various/<br>Various    | -<br>Arlington VA/<br>Huntsville, AL/<br>Colorado Springs,<br>CO | 6.655                  | 6.736   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC Network CX01                 | Various/<br>Various    | Services, DISA,<br>Agencies<br>-                                 | 15.798                 | 22.938  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network C2BMC Program Office Move CX01     | Various/<br>Various    | -<br>-   | 0.000                  | 15.000  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network GCN Transition CX01                | Various/<br>Various    | DISA<br>-  | 10.000                 | 0.000   |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Spiral 6.4 C2BMC Communications Network Common Threat Engineering CX01     | Various/<br>Various    | Various<br>Various   | 0.000                  | 1.693   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Site Activation and Fielding Suites and Communications Gateways CX01       | SS/CPAF                | Lockheed Martin<br>Team<br>-                                     | 0.000                  | 25.880  |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>  |                        |  | 139.825                | 248.320 |            | 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

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|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

**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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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

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|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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 |  |
|---------------------|------------------------|---------|--|--------------|--|-------------|--|---------------|------------------|------------|--------------------------|--|
|                     |                        |         |  |              |  |             |  |               |                  |            |                          |  |
|                     | 139.825                | 248.320 |  | 0.000        |  | 0.000       |  | 0.000         |                  |            |                          |  |

**Remarks**  
NA

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</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 |
| Spiral 6.4D Spiral Design Review            |         |   |   |   | █       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Spiral 6.4 GEM Hardware Install at NORTHCOM |         |   |   |   |         |   |   |   | █       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2011 Missile Defense Agency **DATE:** February 2010

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>CX01: <i>Ballistic Missile Defense C2BMC Block 3.0</i> |
|---|---|--|

Schedule Details

| Event                                       | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| Spiral 6.4D Spiral Design Review            | 1       | 2010 | 1       | 2010 |
| Spiral 6.4 GEM Hardware Install at NORTHCOM | 3       | 2010 | 3       | 2010 |

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

|   |   |  |
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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC 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 |
|--|----------------|------------------|-----------------------|----------------------|------------------------|------------------|------------------|------------------|------------------|------------------|------------|
| WX01: <i>BC Capability Development</i> | 0.000          | 0.772            | 0.000                 | 0.000                | 0.000                  | 0.000            | 0.000            | 0.000            | 0.000            | 0                | 0.772      |
| 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 WX01 FY 2011 is now captured in Project MD25 (Program Element 0603175C).

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

Project WX01 funds a BC Weapon and Sensor Resource Management Study to establish the feasibility and engineering requirements for implementation of a Beyond Line-of-Sight (BLOS) BMDS Launch-On Network and Engage-On Network capability. Network Centric Fire Control, where weapons can be committed and guided in-flight on system level tracks, would allow present-day and advanced interceptors to engage to the limits of their kinematic envelopes, unconstrained by Earth curvature and the tracking range of local sensors. This capability, needed for Early Intercept development, would enable the defense to prosecute earlier engagements and significantly expand the battlespace, potentially enabling shoot-look-shoot tactics and reducing overall interceptor inventory requirements. Network Centric Fire Control could also have compelling logistical and readiness implications; where land, sea, and airborne shooters could be plugged directly into a global fire control grid and engage even in the absence of organic sensor support. The concept relies upon the redundancy and survivability of the global fire control network, the delivery of trusted system level tracks, and the worldwide management of weapon and sensor resources. It must be extensible as the BMDS grows. This major study will lay the groundwork for an implementation roadmap and a phased demonstration plan with knowledge points for resolving critical technical and operational issues.

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

|   | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---------|---------|--------------|-------------|---------------|
| Weapon and Sensor Resource Management Study<br>See Description Below<br><br><i>FY 2009 Accomplishments:</i><br>NA | 0.000   | 0.772   | 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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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC 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 2010 Plans:</i><br/>                     BMDS Launch-On Network and Engage-On Network Architecture Definition for Early Intercept<br/>                     BMDS Network Based Fire Control Performance Assessment<br/>                     Network Failure Mode Analysis<br/>                     Build battle manager interfaces for Unmanned Aerial Vehicle (UAV), space-based sensors, and fire control</p> <p><i>FY 2011 Base Plans:</i><br/>                     NA</p> <p><i>FY 2011 OCO Plans:</i><br/>                     NA</p> |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000   | 0.772   | 0.000        | 0.000       | 0.000         |

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

| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011 Base</b> | <b>FY 2011 OCO</b> | <b>FY 2011 Total</b> | <b>FY 2012</b> | <b>FY 2013</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • 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           |
|   | 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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**Exhibit R-2A, RDT&E Project Justification: PB 2011 Missile Defense Agency** **DATE:** February 2010

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</i> |
|---|---|--|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011<br/>Base</u> | <u>FY 2011<br/>OCO</u> | <u>FY 2011<br/>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To<br/>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • 0603884C: <i>Ballistic Missile Defense Sensors</i>                           |                |                |                         |                        |                          |                |                |                |                |                             |                   |
| • 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 &amp; 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            |
| • 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 &amp; 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         |

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

|   |   |  |
|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</i> |
|---|---|--|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 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            |
| • 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**

Federally Funded Research and Development Center (FFRDC)/University Affiliated Research Center (UARC)/National Laboratory community, with MDA specialists in support, will define and quantitatively characterize a reference concept for BMDS Launch-On Network / Engage-On Network that could be tested and demonstrated cooperatively with the BMDS Element Program Offices in the years beyond FY 2011. Output of this Global Engagement Management and Fire Control Study will be performance specifications, an accounting of critical and operational issues that would have to be resolved on the way to implementation, and a detailed program plan with knowledge points for resolving those issues through simulation, experimentation and demonstration.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency   |   | <b>DATE:</b> February 2010                               |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</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&amp;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&amp;AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.</p> <p><b><u>E. Performance Metrics</u></b><br/>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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|---|---|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</i> |
|---|---|--|

**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          |                  |            |                          |
| Weapon and Sensor Resource Management Study<br>Weapon and Sensor Resource Management Study<br>WX01 | TBD/TBD                | FFRDC/UARC/A&AS<br>-           | 0.000                  | 0.772   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>  |                        |                                | 0.000                  | 0.772   |            | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</i> |
|---|---|--|

**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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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                  | 0.772   |            | 0.000        |            | 0.000       |            | 0.000         |                  |            |                          |

**Remarks**  
NA

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010                               |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC 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 |
| BMDS Launch-On Network and Engage-On Network Architecture Definition |         |   |   |   | ■       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| BMDS Network Based Fire Control Performance Assessment               |         |   |   |   |         | ■ | ■ | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Network Failure Mode Analysis  |         |   |   |   |         | ■ | ■ | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2011 Missile Defense Agency **DATE:** February 2010

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>WX01: <i>BC Capability Development</i> |
|---|---|--|

Schedule Details

| Event  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| BMDS Launch-On Network and Engage-On Network Architecture Definition | 1       | 2010 | 1       | 2010 |
| BMDS Network Based Fire Control Performance Assessment               | 2       | 2010 | 4       | 2010 |
| Network Failure Mode Analysis  | 2       | 2010 | 4       | 2010 |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency  |                       |                         |                              |   |                               |                         |                         |   | <b>DATE:</b> February 2010 |                         |                   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                       |                         |                              | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |                               |                         |                         | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |                            |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>FY 2009 Actual</b> | <b>FY 2010 Estimate</b> | <b>FY 2011 Base Estimate</b> | <b>FY 2011 OCO Estimate</b>                                   | <b>FY 2011 Total Estimate</b> | <b>FY 2012 Estimate</b> | <b>FY 2013 Estimate</b> | <b>FY 2014 Estimate</b>   | <b>FY 2015 Estimate</b>    | <b>Cost To Complete</b> | <b>Total Cost</b> |
| XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i>   | 42.465                | 46.200                  | 0.000                        | 0.000   | 0.000                         | 0.000                   | 0.000                   | 0.000   | 0.000                      | 0                       | 88.665            |
| 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 XX01 FY 2011 - FY 2015 is now captured in Project MD01.

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

Operations and Sustainment

C2BMC Program Operations and Sustainment (O&S) consists of 1) sustaining C2BMC operational capability worldwide 24 hours a day, 7 days a week, 365 days with on-site personnel in 17 time zones, supporting 31 current locations and over 100 major sub-systems; 2) on-site maintenance sub-systems for all C2BMC including suites, planners, remote Enterprise Work Stations (EWS), and GEM Work Stations (GWS), web browsers, and communication site(s) associated with the AN/TPY-2 radar(s); 3) the C2BMC Control Center that provides real-time resolution of operational issues; 4) vendor support which includes coordination and resolution of problems that occur with Commercial-off-the-Shelf (COTS) equipment; 5) training of operator, maintenance personnel, and testers (approximately 700 per year); and 6) hardware and software maintenance and upgrade installation to ensure 24 hours a day, 7 days a week, 365 days a year continuity of C2BMC operations. Operations and Sustainment will support a new EWS, GEM, web browser, planner and/or suite operations fielded in FY 2010.

On-site support provides:

Assistance to the System Administrator of each Combatant Command

Prime contractor support to operational users

On-site maintenance of hardware and software

Security support for the C2BMC equipment, hardware and software and auxiliary communication capabilities

24 hours a day, 7 days a week, 365 days network and equipment operations monitoring via the BMDS Network Operation and Security Center (BNOSC)

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |
|---|---|---|

Support to operators and testers during test, exercises, and wargames

Off-site support provides:

The C2BMC Control Center (help desk) in Colorado Springs, CO provides

Real-time resolution of operational issues

The schedule for maintenance, systems upgrades, tests, exercises, and wargames, coordinated across all users

Collection of data regarding system/sub-system failures and prioritization of corrective actions

Review of hardware/software problems and coordination of Commercial-off-the-Shelf (COTS) developer/vendor service calls

Integrated logistics support planning and management

Hardware and software maintenance and logistics functions that are beyond the capability of on-site support personnel

Inventory and spares management

Sustaining engineering support from the prime contractor and government activities

Maintenance of software licenses and vendor support agreements

Hardware and software maintenance agreements

Vendor depot support services

Training support includes:

Developing and maintaining operator, maintenance personnel, and testers training material for C2BMC components/capabilities

Training tailored to each deployment and/or test

Training curriculum/courses provided for C2BMC Planner, Situational Awareness, Global Engagement Manager (GEM), and the C2BMC Executive Course

Warfighter sustainment training and skill proficiency

Assistance to warfighter in development and execution of Radar Management Course

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

|   | FY 2009 | FY 2010 | FY 2011<br>Base | FY 2011<br>OCO | FY 2011<br>Total |
|---|---------|---------|-----------------|----------------|------------------|
| Unit Personnel, Cont System Improvement, Sustaining Support | 42.465  | 46.200  | 0.000           | 0.000          | 0.000            |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency | <b>DATE:</b> February 2010 |
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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</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></p> <p>Operations and Support procedures are planned for all fielded hardware and software. Maintenance agreements will be established and spare parts will be procured and delivered to each site. At each location an agreement in the form of a site support plan will be drafted and approved to outline the details of support for each site. An overarching system Integrated Logistics Support Plan (ILSP) will be developed to outline the roles and responsibilities for sustaining the C2BMC system.</p> <p>Sustained C2BMC 24 hours a day, 7 days a week, 365 days worldwide<br/>Established stand-alone C2BMC Operations and Sustainment (O&amp;S) in support of European Command (EUCOM) theater and AN/TPY-2 operations (Contingency Architecture Activation Team (CAAT)) ;(C2BMC Element funded software capability and project management; Sensors Element funded hardware, installation, and checkout)<br/>Provided and maintained C2BMC training suite to EUCOM<br/>Provided a Global Engagement Manager (GEM) trainer<br/>Developed curriculum for and trained 700 operators, maintenance personnel, and testers<br/>Resolved real-time operational issues through the C2BMC Control Center and BMDS Network Operation and Security Center (BNOSC)<br/>Provided global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines<br/>Provided and supported communications circuits for fielded C2BMC locations<br/>Provided integrated logistics support planning and management and sustaining engineering support for fielded hardware and software<br/>Provided support of AN/TPY-2 radar communications nodes<br/>Provided operations and sustainment personnel to support test and special operations at AN/TPY-2 site at Pacific Missile Range Facility (PMRF), and for Tobyhanna Army Depot BMDS Communication</p> |         |         |              |             |               |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |
|---|---|---|

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

|  | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Support Complex - Transportable (BCSC-T) development activities (C2BMC Element funded software capability and project management; Sensors Element funded hardware, installation, and checkout)<br/>                     Supported Host Nation operations, demonstrations, and tests<br/>                     Operated BNOSC 24 hours a day, 7 days a week, 365 days</p> <p><i>FY 2010 Plans:</i><br/>                     Sustain C2BMC 24 hours a day, 7 days a week, 365 days worldwide<br/>                     Maintain C2BMC training suite to European Command (EUCOM)<br/>                     Sustain Global Engagement Manager (GEM) trainer<br/>                     Develop curriculum for and train operators, maintenance personnel, and testers<br/>                     Resolve real-time operational issues through the C2BMC Control Center and BMDS Network Operation and Security Center (BNOSC)<br/>                     Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines<br/>                     Provide and support communications circuits for fielded C2BMC locations<br/>                     Provide integrated logistics support planning and management and sustaining engineering support for fielded hardware and software<br/>                     Provide support of AN/TPY-2 radar communications nodes<br/>                     Provide operations and sustainment personnel to support test and special operations for AN/TPY-2 at deployed operational test sites<br/>                     Support Host Nation operations, demonstrations, and tests<br/>                     Provide sustainment training/skills proficiency to C2BMC operations<br/>                     Operate BNOSC 24 hours a day, 7 days a week, 365 days<br/>                     Continue operation and support of communications capabilities to Israel for the Contingency Architecture Activation Team (CAAT)</p> |         |         |              |             |               |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |
|---|---|---|

| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>   | FY 2009 | FY 2010 | FY 2011<br>Base | FY 2011<br>OCO | FY 2011<br>Total |
|--|---------|---------|-----------------|----------------|------------------|
| <p><i>FY 2011 Base Plans:</i><br/>FY 2011 Plans are in Budget Project MD01</p> <p><i>FY 2011 OCO Plans:</i><br/>NA</p> |         |         |                 |                |                  |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 42.465  | 46.200  | 0.000           | 0.000          | 0.000            |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>              |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • 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         |
|   | 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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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010  |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>                       |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011<br/>Base</u> | <u>FY 2011<br/>OCO</u> | <u>FY 2011<br/>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To<br/>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 &amp; 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            |
| • 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 &amp; 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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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011<br/>Base</u> | <u>FY 2011<br/>OCO</u> | <u>FY 2011<br/>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To<br/>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 Command and Control, Battle Management, and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ends 1Q FY 2012. A follow-on contracting strategy will be developed in FY 2010. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>XX01: <i>Command &amp; Control, Battle Management, Communications (C2BMC) Sustainment</i> |
| <p>Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor`s team to function in an Integrated Product Team environment.</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&amp;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&amp;AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.</p> <p><b><u>E. Performance Metrics</u></b><br/>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          |                  |            |                          |
| Unit Personnel, Cont System Improvement, Sustaining Support Unit Personnel, Cont System Improvement, Sustaining Support XX01 | SS/CPAF                | Lockheed Martin Team Arlington, VA | 28.968                 | 32.264  | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Unit Personnel, Cont System Improvement, Sustaining Support Indirect Support XX01  | TBD/TBD                | DISA DECC -                        | 3.042                  | 3.271   | Oct 2009   | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Unit Personnel, Cont System Improvement, Sustaining Support Unit Operations - Leased Circuits XX01                           | TBD/TBD                | DISA Arlington, VA                 | 9.955                  | 10.165  |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| Unit Personnel, Cont System Improvement, Sustaining Support DOTMLPF XX01   | Various/ Various       | SETAC -                            | 0.500                  | 0.500   |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>  |                        |                                    | 42.465                 | 46.200  |            | 0.000        |            | 0.000       |            | 0.000         |                  |            |                          |

**Remarks**

NA

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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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 0.000                  | 0.000   |            | 0.000        |            | 0.000       |            | 0.000         |                  |            |                          |

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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 |
|----------------------------|------------------------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 42.465                 | 46.200  | 0.000        | 0.000       | 0.000         |                  |            |                          |

Remarks  
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| <b>COST (\$ in Millions)</b>  | <b>FY 2009 Actual</b> | <b>FY 2010 Estimate</b> | <b>FY 2011 Base Estimate</b> | <b>FY 2011 OCO Estimate</b>                                   | <b>FY 2011 Total Estimate</b> | <b>FY 2012 Estimate</b> | <b>FY 2013 Estimate</b> | <b>FY 2014 Estimate</b>   | <b>FY 2015 Estimate</b>    | <b>Cost To Complete</b> | <b>Total Cost</b> |
| MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i>   | 0.000                 | 0.000                   | 331.155                      | 0.000   | 331.155                       | 350.771                 | 280.359                 | 313.766   | 288.453                    | 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 CX01 and XX01 for FY 2011 - FY 2015 is now captured in Project MD01.

RDT&E Articles are defined as major C2BMC capability increments (identified as a specific Spiral) which are fielded at multiple locations including Combatant Commands and other operational sites. Budget Project MD01 completes RDT&E Article Spiral 6.4D. MD01 also includes the continuation of engineering for future Spiral 8.2.

The key test event for development is start of Cycle 2, Simulation-Based Verification, when software completes internal C2MBC development and begins testing with other BMDS Elements. Completion of Cycle 5, Site Activation Testing, coupled with successful participation in BMDS ground test campaigns, signals delivery of fully functioning operational software.

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

Based on the Missile Defense Agency's defined architectures and system specifications, the Command and Control, Battle Management and Communications (C2BMC) Program will provide the warfighter the capability to plan the Ballistic Missile Defense (BMD) fight while concurrently tracking all potential ballistic missile threats, and pairing any sensor with any shooter to defeat ballistic missile threats at any range, in any phase, in all theaters. The C2BMC Program will also work to increase coalition partners' capabilities.

The C2BMC Program will expand defense of the United States, allies, and deployed forces by continuing the work initiated in Budget Project BX01 which focused on limited Iranian long-range threats and by enabling a coordinated defense against short-to intermediate- range threats in two regions/theaters.

Specific goals are to deliver the following, which include BMDS planning, situational awareness, sensor management, and engagement coordination functions incorporated in BMDS Integrated Build C and D approved content:

Fully integrated BMD Planner and situational awareness displays with integrated intelligence information and defended asset priority schemes

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| <p>Initial interfaces between weapons and sensors compatible with DoD network-centric service-oriented architecture<br/>Northern Command (NORTHCOM) and European Command (EUCOM) expansion of Global Engagement Manager (GEM)<br/>Incorporate Enhanced C2BMC capability into the C2BMC architecture<br/>Incorporation of BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA) sensor data for radar cueing<br/>Update C2BMC model (BCM), continuously validated by critical engagement conditions (CECs) and Empirical Measurement Events (EMEs)**, for system-level performance assessment to verify models and simulations<br/>Improved network monitoring and computer network defense at the BMDS Network Operations and Security Center (BNOSC)<br/>Capability to easily and quickly incorporate new sensors and weapon systems into the global C2BMC network<br/>Command and Control decision aids to re-direct coordinated engagements<br/>BMDS-level discrimination for boost/early ascent and expanded engagement coordination to include intelligence projections<br/>Continued BMDS global expansion with additional C2BMC deployed locations<br/>Support development of Unifying Missile Defense (UMDF) capabilities<br/>Enhanced secure Information Assurance (IA) architecture</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><b>C2BMC ELEMENT</b></p> <p>The Ballistic Missile Defense (BMD) Planner, Situational Awareness, Global Engagement Manager (GEM), and Ballistic Missile Defense (BMD) Network will all be expanded to include additional BMDS sensors and weapons. The BMD Planner and Situational Awareness will continue to be upgraded for ease of use and understanding based upon warfighter feedback and lessons learned from wargames and exercises. The whole of C2BMC will move to a more distributed processing environment to speed decision making and enable a more geographically diverse (and filterable) system.</p> <p>In the near term capability increments the BMD Planner will evolve to a net enabled capability. The system will be designed to interface with the service components and their evolving systems and enable cross planning between the Combatant Commanders. Future BMD Planner improvements include updates to the Global Engagement Manager, North Atlantic Treaty Organization (NATO) interface improvements with bi-directional coalition partner planning, and Offense/Defense integration for planning.</p> <p>Situational Awareness improvements include the migration to network centric command and control which ties in with evolving Department of Defense command and control architectures. Improved display of individual weapon system engagement and information coordination, along with updates of command authority decision information will result in an integrated common operating picture across the Combatant Commands.</p> |   |   |

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| <p>C2BMC battle management, via the Global Engagement Manager (GEM), will deliver Full X-Band radar sensor control and capabilities for the following Unifying Missile Defense Functions (UMDFs), which are included in BMDS Integrated Build D approved content:</p> <p>Improved threat/object correlation, by accounting for sensor bias and threat features to calculate a common threat track from multiple sensors, incorporation of BMDS Overhead Persistent Infra-Red (OPIR) Architecture (BOA) and Space Based Infra-Red System (SBIRS) sensor data for improved radar cueing, and improved engageable system threat tracks, that has sufficient Quality of Service (QoS) -that is, sufficient data accuracy and low enough latency- for BMDS Element's fire control to enable successful ballistic missile engagements, for regional elements via Link-16 and EHF (e.g., THAAD and Aegis BMD and Ground Based Midcourse Defense Fire Control (GFC))</p> <p>Improved BMDS system discrimination</p> <p>Sensor registration to assess the quality of radar data received in the BMDS</p> <p>System track generation and publishing to BMDS Elements using multiple (geographically filterable) sensors with an ability to create a Target Object Map for use in the GMD interceptor end-game; and enhanced, distributed composite system track with additional discrimination features, and cross-Area of Responsibility (AOR) engagement coordination.</p> <p>Sensor management and weapons engagement coordination aids to direct the BMDS fight and make use of efficient use of limited inventory</p> <p>Enhanced engagement direction with sensor-weapon system target pairing</p> <p>Additionally, GEM will expand engagement coordination to include intelligence projections and BMDS battle management will operate in two regions as well as across regions while providing global situational awareness.</p> <p>The BMD Communications Network portion of C2BMC includes upgrades to the Parallel Staging Network, a dedicated Secret Internet Protocol Router Network (SIPRNET) point-of-presence for greater network service and security, computer network defense, and continued improvement in network monitoring for information assurance via the BMDS Network Operation and Security Center (BNOSC). The BMD Communications Network will feature a more redundant, high availability network with diverse paths and increased communications support to the BMDS elements to include added sensors and weapons to the overall BMDS. Capabilities such as dynamic real-time network management and monitoring will enable the warfighter to monitor the connection to BMDS weapons and anticipate and remedy any issues as they occur, vice having to wait for a human-in-the-loop to report a problem and provide a correction. Additionally, an expanded network centric capability (worldwide connectivity of separately developed sensors and weapon systems) supporting Internet Protocol Version 6 will extend BMDS mission success by providing information management and quality of service to the individual user.</p> <p>The BMD Communications Network ties together sensors (both BMDS radars and space sensors) and weapons systems via the Combatant Commands Command and Control screens and GEM, thereby enabling the National Command Authority and the commanders at the strategic, theater and tactical levels to optimally engage ballistic missile threats at any range, in any phase of flight, at any time including near simultaneous theater, regional and homeland attacks. The BMD Communications Network builds on existing and new global grid data and communications networks to provide a robust, end-to-end, high availability, operational communications</p> |   |   |

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| <p>network (COMNET) infrastructure that quickly and unambiguously shares information across the global BMDS. This sharing of information is performed securely with special emphasis on preventing cyber attack via a BMDS Network Operations and Security Center (BNOSC). Effective networking management and operations relies on the ability to manage, coordinate, and integrate a wide variety of equipment platforms, interfaces with other DoD communications systems, existing/evolving information standards and capabilities, adherence to DoD Information Assurance Certification and Accreditation Process (DIACAP). Defense Information Systems Agency (DISA) services are also highly leveraged in providing world-wide communications.</p> <p>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.</p> <p><b>SITE ACTIVATION</b></p> <p>C2BMC capabilities (hardware and software) will be deployed to NORTHCOM, STRATCOM, PACOM, and EUCOM with existing sites receiving upgrades as needed. Current capabilities will be expanded with numerous BMD Planner, web browser, and Enterprise Workstation installations per warfighter requirements. Planning for future BMDS operations and site installations include Global Engagement Manager (GEM) at European Command (EUCOM), GEM on the Parallel Support Network (PSN) at Northern Command (NORTHCOM), and network enabled capability at various locations. Deployment to these Combatant Commands continues to expand BMDS on a global scale, providing increased protection to the U.S., and its friends and Allies. Preliminary planning for Central Command (CENTCOM) is in process. Site Activation also includes participation in planning for future BMDS operations and site installations.</p> <p><b>OPERATIONS AND SUSTAINMENT</b></p> <p>C2BMC Program Operations and Sustainment (O&amp;S) consists of 1) sustaining C2BMC operational capability worldwide 24 hours a day, 7 days a week, 365 days a year with on-site personnel in 17 time zones, supporting all C2BMC operational locations, and over 100 major sub-systems; 2) on-site sub-systems maintenance for all C2BMC including COCOM suites, GEM Suites planners, remote Enterprise Work Stations (EWS), and GEM Work Stations (GWS), web browsers, and communication site(s) associated with the AN/TPY-2 radar(s); 3) the C2BMC Control Center that provides real-time resolution of operational issues; 4) vendor support which includes coordination and resolution of problems that occur with Commercial-off-the-Shelf (COTS) equipment; 5) training of operator, maintenance personnel, and testers</p> |   |   |

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| <p>(approximately 700 per year); 6) hardware and software maintenance and upgrade installation to ensure 24 hours a day, 7 days a week, 365 days a year continuity of C2BMC operations.</p> <p>On-site support provides:</p> <ul style="list-style-type: none"><li>Assistance to the System Administrator of each Combatant Command</li><li>Prime contractor support to operational users</li><li>On-site maintenance of hardware and software</li><li>Security support for the C2BMC equipment, hardware and software and auxiliary communication capabilities</li><li>24 hours a day, 7 days a week, 365 days a year network and equipment operations monitoring</li><li>Support to operators and testers during test, exercises, and wargames</li></ul> <p>Off-site support provides:</p> <p>The C2BMC Control Center (help desk) in Colorado Springs, CO provides</p> <ul style="list-style-type: none"><li>Real-time resolution of operational issues</li><li>The schedule for maintenance, systems upgrades, tests, exercises, and wargames, coordinated across all users</li><li>Collection of data regarding system/sub-system failures and prioritization of corrective actions</li><li>Review of hardware/software problems and coordination of Commercial-Off-the-Shelf (COTS) developer/vendor service calls</li><li>Integrated logistics support planning and management</li><li>Hardware and software maintenance and logistics functions that are beyond the capability of on-site support personnel</li><li>Inventory and spares management</li><li>Sustaining engineering support from the prime contractor and government activities</li><li>Maintenance of software licenses and vendor support agreements</li><li>Hardware and software maintenance agreements</li><li>Vendor depot support services</li></ul> <p>Training support includes:</p> <ul style="list-style-type: none"><li>Developing and maintaining operator, maintenance personnel, and testers training material for C2BMC components/capabilities</li><li>Training tailored to each deployment and/or test</li></ul> |   |   |

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| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>  |   |   |                            |                         |                        |                          |
|   |   | <b>FY 2009</b>  | <b>FY 2010</b>             | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> |
| <p><i>FY 2011 Base Plans:</i><br/>           Maintain C2BMC training suites<br/>           Sustain Global Engagement Manager (GEM) trainers ;<br/>           Develop curriculum for and train operators, maintenance personnel, and testers<br/>           Resolve real-time operational issues through the C2BMC Control Center and BMDS Network Operation and Security Center (BNOSC)<br/>           Provide global BMDS communications via leased Defense Information Systems Agency (DISA) circuit lines<br/>           Provide and support communications circuits for fielded C2BMC locations<br/>           Provide integrated logistics support planning and management and sustaining engineering support for fielded hardware and software<br/>           Provide support of AN/TPY-2 radar communications nodes<br/>           Provide operations and sustainment personnel to support test and special operations for AN/TPY-2 at deployed operational test sites<br/>           Support Host Nation operations, demonstrations, and tests<br/>           Provide sustainment training/skills proficiency to C2BMC operations<br/>           Upgrade and maintain computer network defense and network monitoring in the BNOSC<br/>           Operate the BNOSC 24/7/365</p> <p><i>FY 2011 OCO Plans:</i><br/>           NA</p> |   |   |                            |                         |                        |                          |
| Site Activation and Fielding<br>See Description Below<br><br><p><i>FY 2009 Accomplishments:</i><br/>           FY 2009 Accomplishments are in Budget Project BX01</p>   |   | 0.000   | 0.000                      | 31.825                  | 0.000                  | 31.825                   |

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

|   | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---------|---------|--------------|-------------|---------------|
| Define, develop and start acquisition of C2BMC Deployable Interface Nodes (CDINs) (C2BMC Element funded software capability and project management; Sensors Element funded hardware, installation, and checkout)<br>Establish a Host Nation Situation Awareness (HN SA) liaison presence with the Host Nations government and particularly within their defense structure.<br><br><i>FY 2011 OCO Plans:</i><br>NA |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000   | 0.000   | 331.155      | 0.000       | 331.155       |

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

| <b>Line Item</b>  | 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  |

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

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 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 &amp; 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            |
| • 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 &amp; 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            |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 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 Command and Control, Battle Management, and Communications (C2BMC) acquisition strategy is consistent with the Missile Defense Agency's capability-based acquisition strategy that emphasizes testing, incremental development, evolutionary acquisition, and knowledge-based funding. Lockheed Martin Mission Systems is the C2BMC prime contractor via an Other Transaction Agreement contract vehicle, which ends 1Q FY 2012. A follow-on contracting strategy will be developed during FY 2010. Major team members to Lockheed are Northrop-Grumman, Boeing, Raytheon, and General Dynamics. They are charged with the development, testing, fielding, training, and operations and sustainment support of the C2BMC system. They perform development and testing of C2BMC products in Arlington, VA; Huntsville, AL; and Colorado Springs, CO; and provide worldwide on-site operations and maintenance support. Additionally, the Defense Information Systems Agency (DISA) supports C2BMC worldwide long-haul communications. C2BMC Program Office government, Federally Funded Research and Development Center/University Affiliated Research Center (FFRDC/UARC), and Contract Support Services (CSS) personnel are also fully integrated as part of the Prime contractor's team to function in an Integrated Product Team environment.

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</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&amp;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&amp;AS support includes engineering and technical services; studies, analyses, and evaluation; and management and professional services.</p> |   |   |
| <b><u>E. Performance Metrics</u></b><br>NA  |   |   |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

**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 C2BMC Hardware(HW)/ Software(SW) Development, Integration & Test (I&T) MD01 | SS/CPAF                | Lockheed Martin Team Colorado Springs, CO                   | 0.000                  | 0.000   |            | 46.718       | Oct 2010   | 0.000       |            | 46.718        | Continuing       | Continuing | Continuing               |
| Development C2BMC HW/SW Development, I&T MD01   | SS/CPAF                | Lockheed Martin Team Huntsville, AL                         | 0.000                  | 0.000   |            | 7.078        | Oct 2010   | 0.000       |            | 7.078         | Continuing       | Continuing | Continuing               |
| Development C2BMC Product Engineering & Development MD01                                | SS/CPAF                | Lockheed Martin Team Arlington, VA                          | 0.000                  | 0.000   |            | 87.772       | Oct 2010   | 0.000       |            | 87.772        | Continuing       | Continuing | Continuing               |
| Development C2BMC Integration MD01  | Various/<br>Various    | Services, DISA, Agencies<br>-                               | 0.000                  | 0.000   |            | 23.180       | Oct 2010   | 0.000       |            | 23.180        | Continuing       | Continuing | Continuing               |
| Development Contract Support Services MD01  | SS/FFP                 | Cobham Analytic Solutions Arlington, VA                     | 0.000                  | 0.000   |            | 19.392       | Oct 2010   | 0.000       |            | 19.392        | Continuing       | Continuing | Continuing               |
| Development Federally Funded Research & Development Centers MD01                        | SS/CPAF                | MITRE, IDA, ORNL, MIT/LL Arlington, VA                      | 0.000                  | 0.000   |            | 12.200       | Oct 2010   | 0.000       |            | 12.200        | Continuing       | Continuing | Continuing               |
| Development MDA Civilian, Travel & PCS MD01   | Various/<br>Various    | - Arlington, VA/<br>Huntsville, AL/<br>Colorado Springs, CO | 0.000                  | 0.000   |            | 6.885        | Oct 2010   | 0.000       |            | 6.885         | Continuing       | Continuing | Continuing               |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

**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          |                  |            |                          |
| Operations and Support Unit Personnel, Cont System Improvement, Sustaining Support MD01 | SS/CPAF                | Lockheed Martin Team<br>Arlington, VA | 0.000                  | 0.000   |            | 31.953       | Oct 2010   | 0.000       |            | 31.953        | Continuing       | Continuing | Continuing               |
| Operations and Support Indirect Support MD01  | Various/<br>Various    | DISA DECC<br>-                        | 0.000                  | 0.000   |            | 4.816        | Oct 2010   | 0.000       |            | 4.816         | Continuing       | Continuing | Continuing               |
| Operations and Support Communications Leases MD01                                       | Various/<br>Various    | DISA<br>-                             | 0.000                  | 0.000   |            | 7.573        | Oct 2010   | 0.000       |            | 7.573         | Continuing       | Continuing | Continuing               |
| Operations and Support DOTMLPF MD01   | Various/<br>Various    | SETAC<br>-                            | 0.000                  | 0.000   |            | 0.500        | Oct 2010   | 0.000       |            | 0.500         | Continuing       | Continuing | Continuing               |
| Operations and Support Warfighter Training MD01   | SS/CPAF                | Lockheed Martin Team<br>Arlington, VA | 0.000                  | 0.000   |            | 2.665        | Oct 2010   | 0.000       |            | 2.665         | Continuing       | Continuing | Continuing               |
| Site Activation and Fielding Suites and Communications Gateways MD01                    | SS/CPAF                | Lockheed Martin Team<br>-             | 0.000                  | 0.000   |            | 31.825       | Oct 2010   | 0.000       |            | 31.825        | Continuing       | Continuing | Continuing               |
| Comms for Aegis Ashore Program Phase 1 (AN/TPY-2) MD01                                  | Various/<br>Various    | Lockheed Martin Team<br>DISA, Various | 0.000                  | 0.000   |            | 30.600       |            | 0.000       |            | 30.600        | Continuing       | Continuing | Continuing               |
| Comms for Aegis Ashore Program Phase 2 (Aegis #1) MD01                                  | Various/<br>Various    | DISA<br>Various                       | 0.000                  | 0.000   |            | 4.250        |            | 0.000       |            | 4.250         | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>   |                        |                                       | 0.000                  | 0.000   |            | 317.407      |            | 0.000       |            | 317.407       |                  |            |                          |

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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

**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          |                  |            |                          |
| <b>Subtotal</b>    |                        |                                | 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          |                  |            |                          |
| Development BMDS Level Testing MD01 | SS/CPAF                | Lockheed Martin Team           | 0.000                  | 0.000   |            | 13.748       |            | 0.000       |            | 13.748        | Continuing       | Continuing | Continuing               |
| <b>Subtotal</b>                     |                        |                                | 0.000                  | 0.000   |            | 13.748       |            | 0.000       |            | 13.748        |                  |            |                          |

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|---|-----------------------------------|---|-------------------------------|---|-------------------|---------------------|-------------------|---|-------------------|----------------------|----------------------------|-------------------|---------------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2011 Missile Defense Agency</b>   |                                   |   |                               |   |                   |                     |                   |   |                   |                      | <b>DATE:</b> February 2010 |                   |                                 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                                   |   |                               | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |                   |                     |                   | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |                   |                      |                            |                   |                                 |
| <b>Test and Evaluation (\$ in Millions)</b>   |                                   |   |                               |   |                   |                     |                   |   |                   |                      |                            |                   |                                 |
|   |                                   |   |                               | <b>FY 2010</b>  |                   | <b>FY 2011 Base</b> |                   | <b>FY 2011 OCO</b>  |                   | <b>FY 2011 Total</b> |                            |                   |                                 |
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>   | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>   | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b>    | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Remarks</b><br>NA  |                                   |   |                               |   |                   |                     |                   |   |                   |                      |                            |                   |                                 |
| <b>Management Services (\$ in Millions)</b>   |                                   |   |                               |   |                   |                     |                   |   |                   |                      |                            |                   |                                 |
|   |                                   |   |                               | <b>FY 2010</b>  |                   | <b>FY 2011 Base</b> |                   | <b>FY 2011 OCO</b>  |                   | <b>FY 2011 Total</b> |                            |                   |                                 |
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Total Prior Years Cost</b> | <b>Cost</b>   | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>   | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b>    | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Subtotal</b>   |                                   |   | 0.000                         | 0.000   |                   | 0.000               |                   | 0.000   |                   | 0.000                |                            |                   |                                 |
| <b>Remarks</b><br>NA  |                                   |   |                               |   |                   |                     |                   |   |                   |                      |                            |                   |                                 |
|   |                                   |   | <b>Total Prior Years Cost</b> | <b>FY 2010</b>  |                   | <b>FY 2011 Base</b> |                   | <b>FY 2011 OCO</b>  |                   | <b>FY 2011 Total</b> | <b>Cost To Complete</b>    | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>  |                                   |   | 0.000                         | 0.000   |                   | 331.155             |                   | 0.000   |                   | 331.155              |                            |                   |                                 |
| <b>Remarks</b><br>NA  |                                   |   |                               |   |                   |                     |                   |   |                   |                      |                            |                   |                                 |

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|   |   |   |
|---|---|---|
| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2011 Missile Defense Agency  |   | <b>DATE:</b> February 2010  |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</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 |
| Spiral 6.4 GEM HW Installation at EUCOM |         |   |   |   |         |   |   |   | ■       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Spiral 6.4D Cycle 2 Testing             |         |   |   |   |         |   |   |   | ■       | ■ | ■ |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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**Exhibit R-4A, RDT&E Schedule Details: PB 2011 Missile Defense Agency** **DATE:** February 2010

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD01: <i>Command &amp; Control, Battle Management, Communications (C2BMC)</i> |
|---|---|---|

Schedule Details

| Event                                   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| Spiral 6.4 GEM HW Installation at EUCOM | 1       | 2011 | 1       | 2011 |
| Spiral 6.4D Cycle 2 Testing             | 1       | 2011 | 3       | 2011 |

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

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>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> | 10.392         | 11.988           | 0.000                 | 0.000                | 0.000                  | 0.000            | 0.000            | 0.000            | 0.000            | 0                | 22.380     |
| 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<br>See Description Below<br><br><i>FY 2009 Accomplishments:</i><br>See Section A: Mission Description and Budget Item Justification ;<br><br><i>FY 2010 Plans:</i><br>NA<br><br><i>FY 2011 Base Plans:</i><br>NA | 10.392  | 11.988  | 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

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>ZX40: <i>Program-Wide Support</i> |
|---|---|---|

|  |                |                |                     |                    |                      |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>B. Accomplishments/Planned Program (\$ in Millions)</b> |                |                |                     |                    |                      |
|  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011 Base</b> | <b>FY 2011 OCO</b> | <b>FY 2011 Total</b> |
| <i>FY 2011 OCO Plans:</i><br>NA                            |                |                |                     |                    |                      |
| Accomplishments/Planned Programs Subtotals                 | 10.392         | 11.988         | 0.000               | 0.000              | 0.000                |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>              |                |                |                     |                    |                      |                |                |                |                |                         |                   |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <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

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>ZX40: <i>Program-Wide Support</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 0603893C: <i>SPACE TRACKING &amp; 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            |
| • 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 &amp; 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         |

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

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|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>ZX40: <i>Program-Wide Support</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 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

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>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            | 11.470                | 0.000                | 11.470                 | 13.314           | 9.419            | 10.156           | 10.483           | 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<br>See Description Below<br><br><i>FY 2009 Accomplishments:</i><br>NA<br><br><i>FY 2010 Plans:</i><br>NA | 0.000   | 0.000   | 11.470       | 0.000       | 11.470        |

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|   |                |                |   |                        |                          |                |   |                         |                        |                             |                   |
|---|----------------|----------------|---|------------------------|--------------------------|----------------|---|-------------------------|------------------------|-----------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification: PB 2011 Missile Defense Agency</b>  |                |                |   |                        |                          |                |   |                         |                        | <b>DATE:</b> February 2010  |                   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                |                | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |                        |                          |                | <b>PROJECT</b><br>MD40: <i>Program-Wide Support</i> |                         |                        |                             |                   |
| <b>B. Accomplishments/Planned Program (\$ in Millions)</b>  |                |                |   |                        |                          |                |   |                         |                        |                             |                   |
|   |                |                |   |                        |                          | <b>FY 2009</b> | <b>FY 2010</b>                                      | <b>FY 2011<br/>Base</b> | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b>    |                   |
| <i>FY 2011 Base Plans:</i><br>NA  |                |                |   |                        |                          |                |   |                         |                        |                             |                   |
| <i>FY 2011 OCO Plans:</i><br>NA   |                |                |   |                        |                          |                |   |                         |                        |                             |                   |
| Accomplishments/Planned Programs Subtotals  |                |                |   |                        |                          | 0.000          | 0.000   | 11.470                  | 0.000                  | 11.470                      |                   |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |                |                |   |                        |                          |                |   |                         |                        |                             |                   |
| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b>                                       | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b>                                      | <b>FY 2014</b>          | <b>FY 2015</b>         | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • 0603175C: <i>Ballistic Missile<br/>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<br/>Defense Terminal Defense<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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<br/>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         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification: PB 2011 Missile Defense Agency</b>  |                |                |   |                        |                          |                |   |                |                | <b>DATE:</b> February 2010  |                   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                |                | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> |                        |                          |                | <b>PROJECT</b><br>MD40: <i>Program-Wide Support</i> |                |                |                             |                   |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |                |                |   |                        |                          |                |   |                |                |                             |                   |
| <b>Line Item</b>  | <b>FY 2009</b> | <b>FY 2010</b> | <b>FY 2011<br/>Base</b>                                       | <b>FY 2011<br/>OCO</b> | <b>FY 2011<br/>Total</b> | <b>FY 2012</b> | <b>FY 2013</b>                                      | <b>FY 2014</b> | <b>FY 2015</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • 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 &amp; 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            |
| • 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 &amp; 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            |

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

|   |   |   |
|---|---|---|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603896C: <i>BMD C2BMC</i> | <b>PROJECT</b><br>MD40: <i>Program-Wide Support</i> |
|---|---|---|

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

| <u>Line Item</u>   | <u>FY 2009</u> | <u>FY 2010</u> | <u>FY 2011</u><br><u>Base</u> | <u>FY 2011</u><br><u>OCO</u> | <u>FY 2011</u><br><u>Total</u> | <u>FY 2012</u> | <u>FY 2013</u> | <u>FY 2014</u> | <u>FY 2015</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • 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.

**E. Performance Metrics**

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